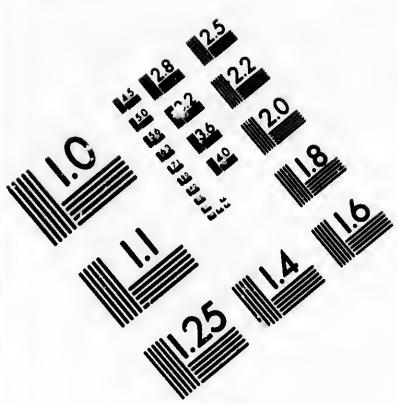

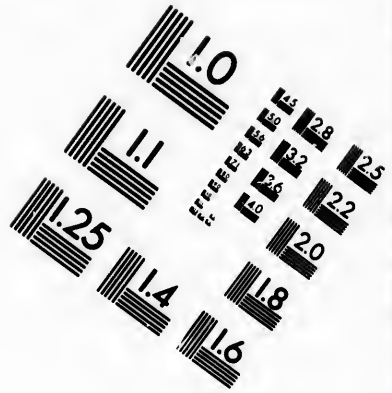

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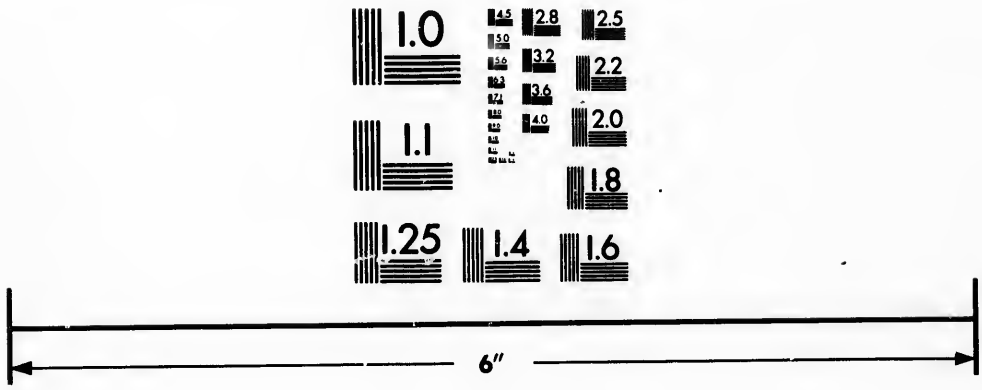

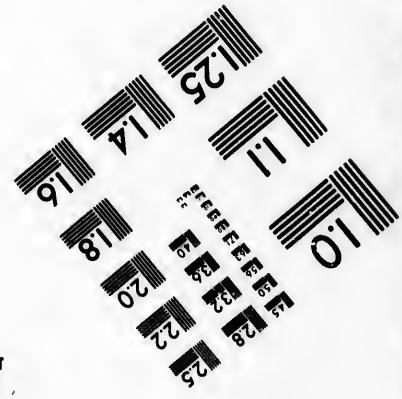

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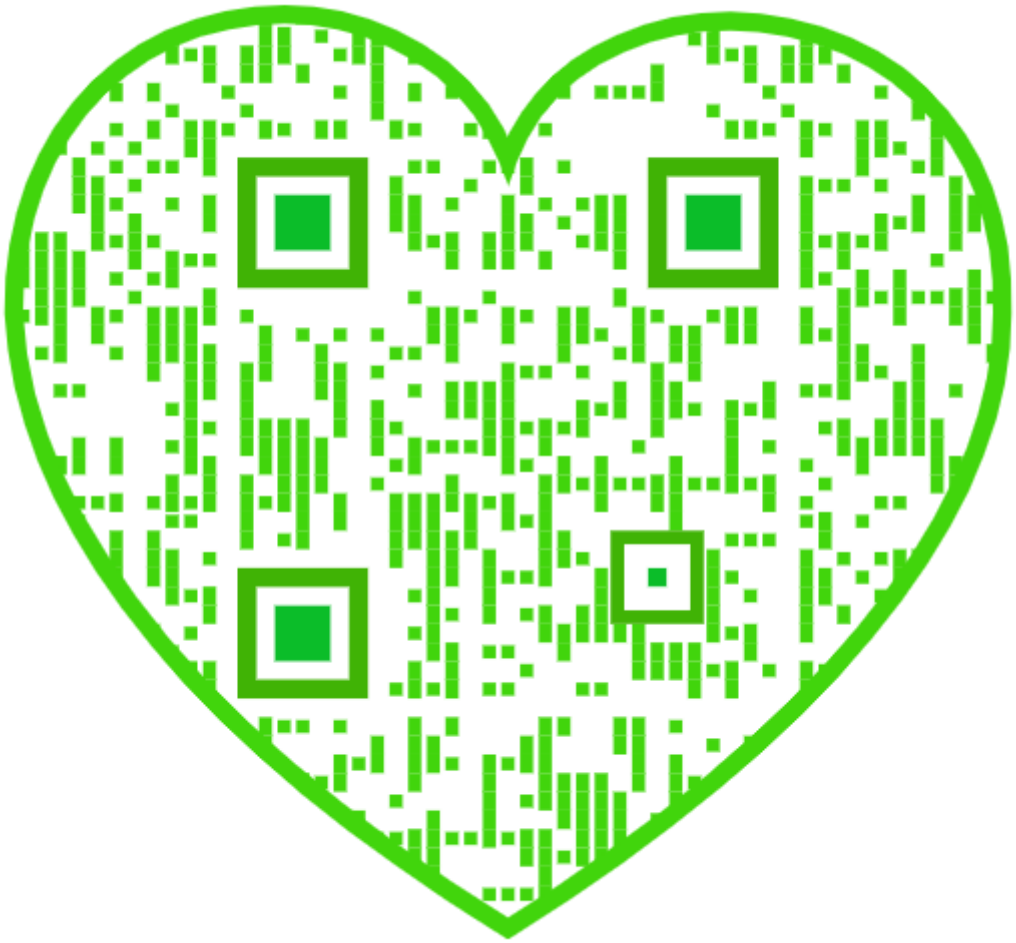

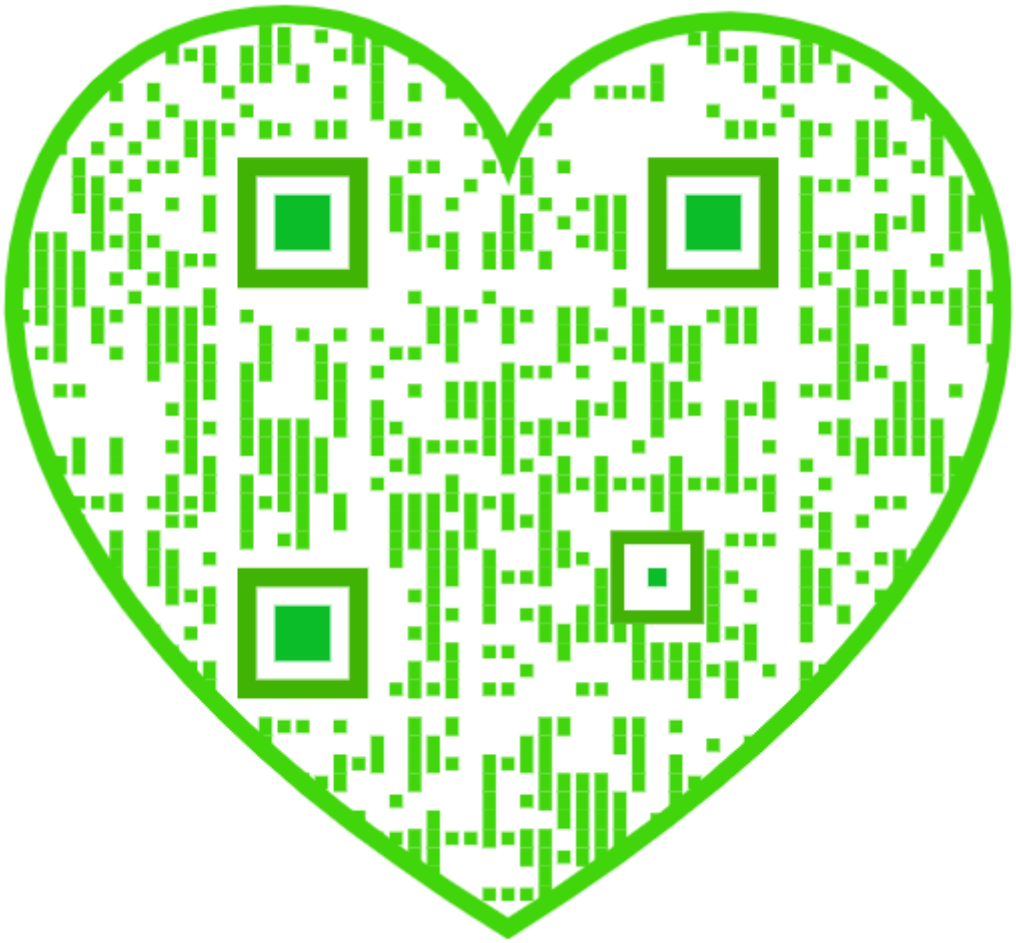

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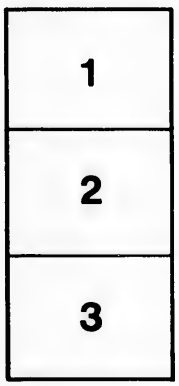

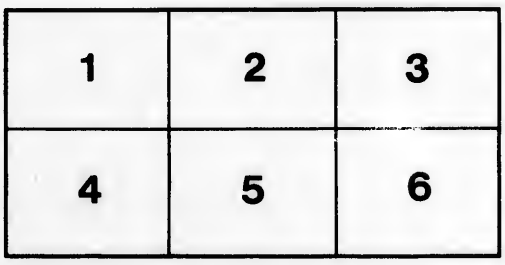

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NOVA SCOTIA, BAY OF FUNDY, No. 39

No. 39

NOVA SCOTIA, BAY OF FUNDY,

AND

SOUTH SHORE

OF

GULF OF ST. LAWRENCE.

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No. 99.

U. S.

SAILING DIRECTIONS

FOR

NOVA SCOTIA, BAY OF FUNDY, AND SOUTH SHORE OF GULF OF ST. LAWRENCE.

Compiled by

R. H. ORR, U. S. HYDROGRAPHIC OFFICE.

By direction of

LIEUT. COMMANDER RICHARDSON CLOVER, U. S. N.,
Hydrographer.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1891.

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3.9.13. Oct. 6-13.

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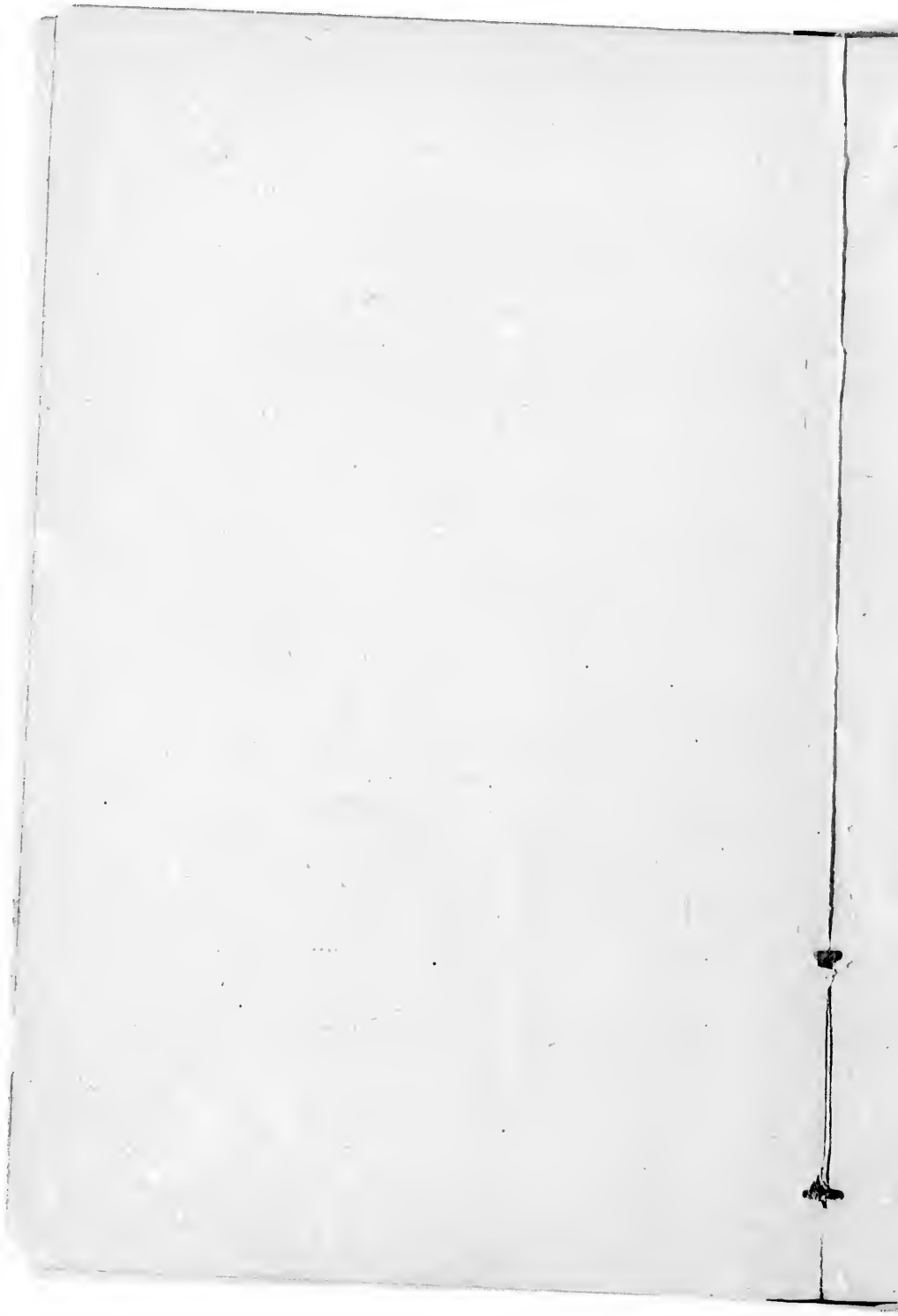

PREFACE.

The following sailing directions for the Bay of Fundy, coasts of Nova Scotia, and the southern shore of the Gulf of St. Lawrence commence at Meridian Point, on the coast of Maine, in 67° 30′ west longitude, follow the coast line around the Bay of Fundy, along the SW. and SE. shores of Nova Scotia, the southern shore of the Gulf of St. Lawrence, to Miramichi Bay.

In the compilation of this volume the following books and authorities have been consulted:

Southeast Coast of Nova Scotia and Bay of Fundy, 1885, Admiralty.

St. Lawrence Pilot, Vol. II, 1881, Admiralty.

The latest United States Hydrographic Office and British Admiralty charts.

Office of Naval Intelligence, Bureau of Navigation.

Port Charges of the World, Hunter, 1890.

RICHARDSON CLOVER,
Lieut. Commander, U. S. Navy, Hydrographer.

U. S. HYDROGRAPHIC OFFICE,
Navy Department, 1891.

NOTE.

Bearings and courses are true. The direction of the wind is the point from which it blows; that of the currents the point towards which they set. Distances are expressed in nautical miles, and the soundings, unless otherwise stated, are reduced to mean low water.

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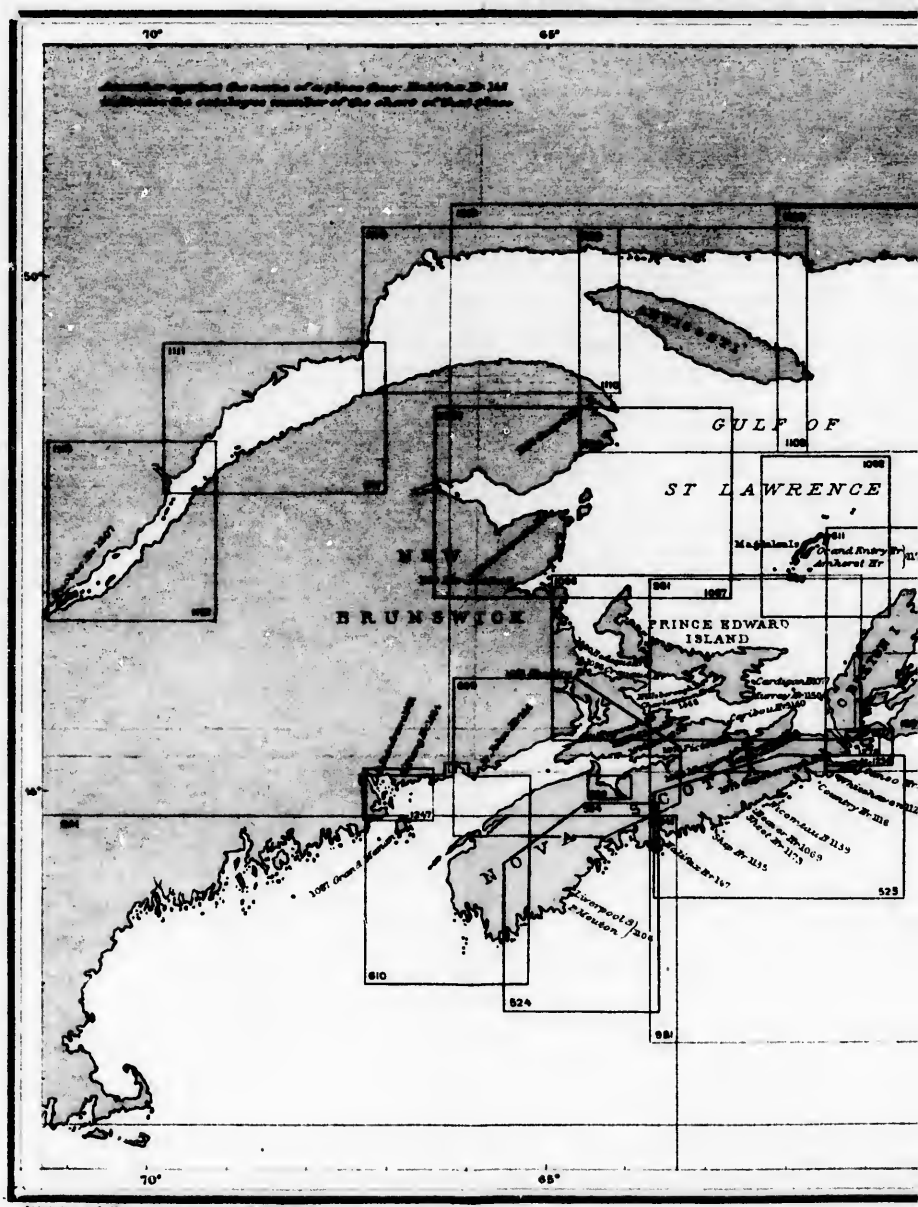

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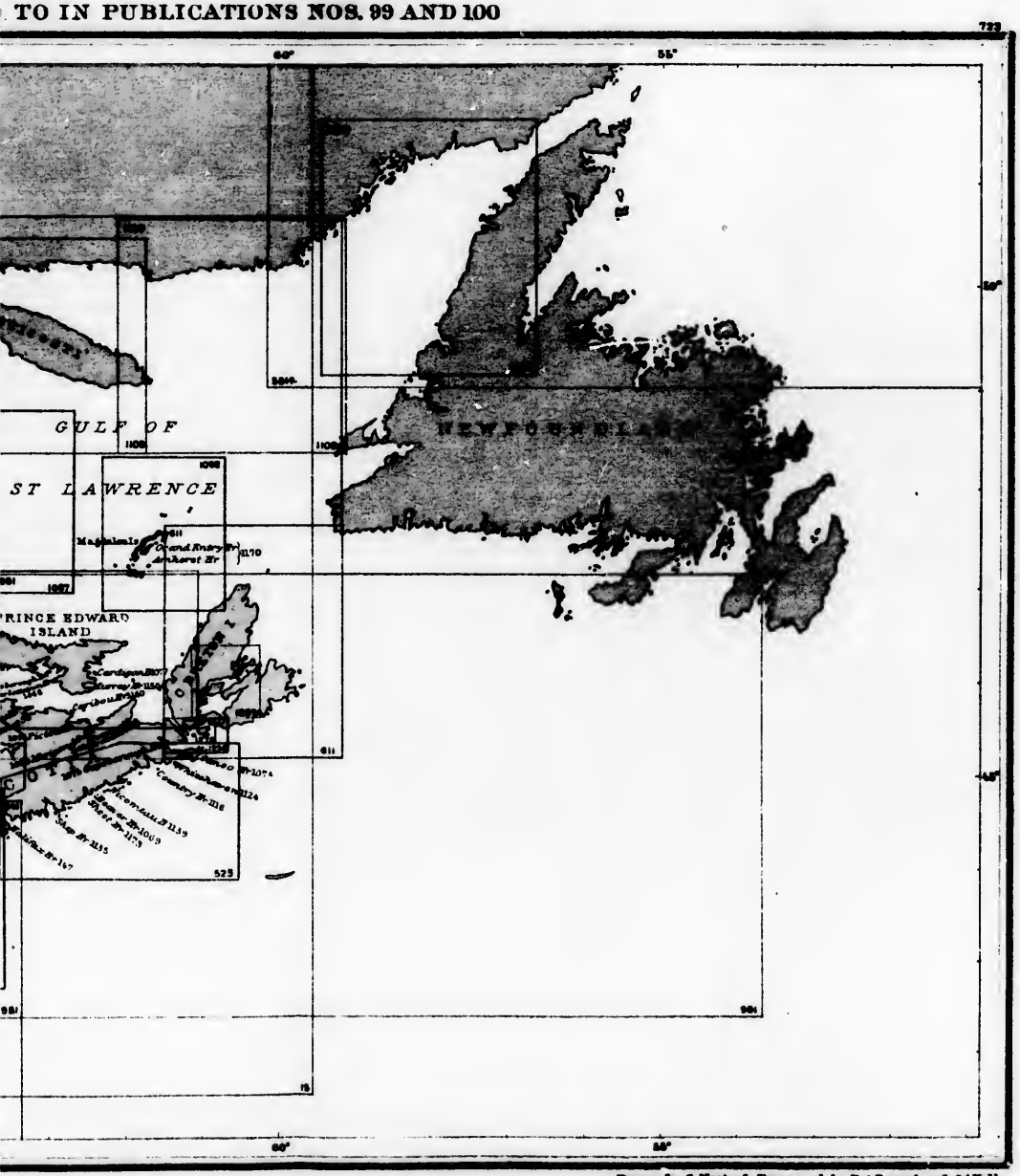

Drawn by G.Westcott. Engraved by R.A.Daniel and C.A.Holt

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CHAPTER I.

GENERAL REMARKS—NEWFOUNDLAND AND NOVA SCOTIA BANKS.

The province of New Brunswick, which forms the northern shore of the Bay of Fundy, limits the Gulf of St. Lawrence on the west and the St. Lawrence River on the south, and has a coast line of about 500 miles, which is only interrupted by the low isthmus which joins it with Nova Scotia.

New Brunswick was first settled by the French in 1639, and it continued, in connection with Nova Scotia, to form part of Acadia, or New France, till it fell into the hands of the British after the capture of Quebec in 1759; it was formally ratified as an English possession in 1763, and from that period was annexed to Nova Scotia until 1785, when it became a separate colony.

In 1881 the population of New Brunswick amounted to 321,233.

The general surface of this province is broken by a series of bold undulations, which do not, however, rise into mountains, and is traversed by many rivers, the principal of which is that of St. John, which flows into the well-known harbor of the same name.

Coal is found in great abundance, and iron ore and gypsum, as well as other minerals, are also to be found in considerable quantities. A great portion of the country is covered by dense forests, and the cutting and exporting of timber affords remunerative employment to a large number of the inhabitants. Shipbuilding is carried on to a considerable extent throughout the province, but chiefly at St. John.

Nova Scotia, a province of British North America, is an extensive peninsula varying in breadth from 50 to 100 miles, and connected with the continent by an isthmus only 8 miles in width, having the Bay of Fundy on the one side and Northumberland Strait on the other. It lies between latitude 43° and 46° N., and longitude 61° and 67° W.; and is bounded on the north by Northumberland Strait, which separates it from Prince Edward Island; NE. by the Gut of Canso, lying between it and Cape Breton Island (now a county of Nova Scotia); south and SE. by the Atlantic Ocean; west by the Bay of Fundy, and NW. by New Brunswick.

The soils of Nova Scotia are various along the south shore; the granite forms the basis, extending in many places 20 miles into the interior. This region is the least fertile, and being that which strangers first see is apt to create an unfavorable impression; but there are else-

where extensive alluvial tracts, producing the most abundant crops. The forests also abound in good timber, the ash, beech, birch, maple, oak, pine, and spruce being the most common trees indigenous to the country.

The population of Nova Scotia is about 500,000.

Caution.—In the following pages will be found the latest information respecting the approaches to, as well as the appearance of, the SE. coast of Nova Scotia, though it must be borne in mind that peculiar and distinctive features are not easily recognizable in the usual misty weather from distances at which, in consequence of numerous outlying dangers, it would be prudent for a vessel uncertain of her position to be kept from the land.

Climate.—The extremes of temperature during the year vary from 6° to 8° (F.) below zero, to 80° above it; the average of the coldest month being about 20°, and that of the hottest about 70°. The severity of winter seldom sets in until the close of December; frost generally continues from Christmas to April, being followed by a spring of short duration. The cold weather is usually dry, and the summer heat regular and temperate; the autumn is, however, the most enjoyable season.

The comparatively mild climate enjoyed by Nova Scotia seems to be attributable in some degree to the influence of the Gulf Stream, which prevents the harbors of the Atlantic from being frozen during the winter like those on the northern shore of the province.

The climate of New Brunswick is similar to that of Nova Scotia, being subject to extremes of heat and cold. The winter lasts from November to April, the severest cold being experienced between the third weeks of December and March. The prevailing summer winds vary from south to WSW., when dense fogs are often produced on the shores of the Bay of Fundy, and extend 15 to 20 miles inland.

Winds.—The prevailing winds in the Bay of Fundy during the summer are from south to SW., and in autumn from north to NE., generally strong. Winds from south to SW. generally bring fogs, from west to north, dry clear weather; winds from NE. to SE. are generally accompanied by rain; southerly winds veer to the west, NW., and north.

Fogs.—The fogs frequently give but little warning, and generally follow southerly or southwesterly winds, which bring with them heat and moisture from the Gulf Stream; they chiefly prevail during the months of July and August, and hang principally on the coast between Cape Sable and Bryer Island and the vicinity of Grand Manan Island.

On the Nova Scotia coast eastward of Bryer Island the fog generally clears for a short distance off shore when the wind is to the southward of SW., and on proceeding to the eastward the belt of clear increases in breadth. On the New Brunswick shore the fog generally clears with the wind to the westward of WNW.

Smokes.—During the summer months the haze occasioned by the smoke from burning forests in the neighboring State of Maine is almost

as bad as a fog, being frequently of sufficient density to obscure lights at night when only a short distance from them.

Fogs, Winds, and Barometer on the SE. Coast of Nova Scotia.—Fogs are prevalent all the year round, but during the spring and summer months dense fogs or rain almost always accompany all winds from the sea, from ENE. around by south to WSW. In winter the rain is frequently replaced by snow. During the autumnal and winter months winds from between north and west become more frequent, and, being off the land, are always accompanied by clear weather.

Strong gales of wind do not often occur in May, June, or July; but after the middle of August they are often of great strength, and it then becomes essential to attend carefully to the indications of the barometer. Strong winds from east, round by south, to WSW., are always accompanied by a falling barometer; when, therefore, these winds begin to abate, and the barometer at the same time ceases to fall, a change of wind, more or less sudden, to the opposite direction may be expected, with a rising barometer and fine weather; if it be winter the change will probably be accompanied by intense frost, coating the vessel, sails, and rigging with ice.

Again, a high barometer, stationary or beginning to fall, indicates that a SE. or SW. wind, with accompanying rain and fog, is not far distant; and if, at the same time, there be a bank of clouds rising above the northwestern horizon, the indication is certain.

Caution.—It is essential to the safety of vessels to attend to these indications, for to the neglect of such precautions, more especially of the deep-sea lead, no less than to the fogs and irregular currents, the shipwrecks on Sable Island and the SE. coast of Nova Scotia are attributable.

All this portion of the sea, from the eastern limit of the bank of Newfoundland, past Cape Race to Halifax, as well as to Portland, Boston, or other harbors of the coast of the United States, is within soundings, and therefore during foggy weather, or when in doubt respecting the ship's position, frequent soundings are absolutely necessary.

Another important point to which due attention should be paid is, that in approaching the coast of Nova Scotia the variation of the compass changes rapidly, and, if not allowed for, might easily run a vessel into danger.

Tides.—The tidal currents along the shores of the Bay of Fundy are uncertain both in velocity and direction, and in navigating the bay extreme caution is necessary when within tidal influences, whose velocities have been known to vary from one to 8 miles an hour.

Capt. R. V. Hamilton remarks that off the Tusket Islands, the tides are strong and eddying, and that H. M. S. *Sphinx*, though steaming at the rate of 7 knots an hour, was whirled almost completely round against the helm.

The same authority states that the offing tides are likely to mislead,

and that he was informed by a fisherman that the tidal current on Brown bank—off Cape Sable—occasionally ran to the NE. for 15 hours continuously at the rate of 2 miles an hour (which would account for vessels from Boston being so frequently set up the Bay of Fundy), whilst at other times the set would be as strong to the SW.

No reliance, therefore, can be placed either in the rate or direction of the off-shore tides.

Currents on the SE. Coast of Nova Scotia.—The irregular currents are said to be one of the principal causes of the frequent wrecks on Sable Island. The main branch of the Labrador Current, after passing along the eastern coast of Newfoundland, turns to the westward, and is joined by another branch of the same current, which, having entered the Gulf of St. Lawrence through the Strait of Belleisle, runs out to the southeastward, between Newfoundland and Cape Breton Island. These currents are rendered inconstant and irregular both in strength and direction, by local and distant winds; but the general tendency is well known to be to the westward, for vessels find no difficulty in working to windward in that direction, anywhere to the northward of the Gulf Stream; and hence it is that many of the vessels wrecked on Sable Island were supposed to have been well to the eastward of its position when they ran on shore.

BANKS.

Great Bank of Newfoundland.—This bank extends nearly 300 miles north and south, between the parallels of 48° and 43° N., and 280 miles east and west, between the meridians of 48° and 55° W. The only dangers whose existence have been verified, are the Virgin Rocks and banks, and the Eastern Rocks.

The form of the bank is irregular, but it reaches its most eastern limit in the parallel of the Virgin Rocks. South of this it trends to the southwest, and decreases in depth, so that in the parallel of 44° N. there is only a depth of 22 fathoms, sand. In the parallel of 43° N. and meridian of 50° W. the bank falls into deep water, and its 60-fathom edge trends to the NW.

The Great Bank is separated from Ballard Bank near Cape Race by a channel about 20 miles wide, having from 80 to 100 fathoms, mud; but its northwestern limit has not yet been correctly defined.

The general depth of water on the Great Bank varies from 30 to 45 fathoms, and the bottom is usually sand, gravel, or broken shell.

Virgin Rocks.—The bank (with depth of 9 to 20 fathoms) on which these rocks are situated, occupies a space 6 miles long in a north and south direction, and one mile broad. The least depth found on the Virgin rocks was 3 fathoms, over a small pinnacle, on which the sea breaks in heavy weather; from this pinnacle, two rocks with 4 and 5½ fathoms water over them, lie respectively north, distant nearly 200 yards, and SW. ¼ mile distant; these rocks with surrounding shoal ground of less

than 20 fathoms, comprised within a diameter of about 1,100 yards, form the Main Ledge.

South shoal with 4¾ fathoms, the least water, is situated south 1¾ miles from Main Ledge, and occupies a space 200 yards long in a north and south direction, with a breadth of 700 yards, the depths being under 20 fathoms. This shoal is reported by the fishermen to break heavier, and to be more dangerous than the Main Ledge. Main Ledge and South Shoal are the only dangers in ordinary weather, but several other parts on these shoals are reported to break in heavy gales; the foul ground, combined with the tidal stream, causing a confused sea even in strong breezes.

Eastern Shoals.—The least water found on these shoals was 7 fathoms, about ½ mile south of the Nine-fathom Bank which lies near the center of a group of shoal patches extending about 3½ miles in a north and south direction, with a breadth of 2 miles, having depths on them of 13 to 25 fathoms. The Nine-fathom Bank is in latitude 46° 26′ 45″ N., longitude 50° 28′ 6″ W.

Eastern Shoals are the easternmost known to the fishermen; those with 13 fathoms or less over them are reported to break in heavy weather; with a strong breeze there is a confused sea in the locality.

In the immediate neighborhood of the Virgin and Eastern Rocks the tidal stream attains a velocity of three-quarters of a knot an hour, but a few miles from them it is scarcely perceptible; during the period of examination a slight southerly set was experienced.

Green Bank, on which the least depth of water is 30 fathoms, stony bottom, is in reality the western extremity of the Great Bank, being only partially separated from it by a gully of deep water, in about longitude 54° W., having over 60 fathoms mud in it. Its western limit is in longitude 55° W., and its southern margin in latitude 44° 50′ N., and the peculiarity of its western limit nearly coinciding with the meridian of 55° W. makes it of service in verifying the longitude. The deep gully between it and Bank St. Pierre is 14 miles wide, with 70 to 90 fathoms mud.

A 5-fathoms patch in latitude 45° 46′ N., longitude 54° 20′ W., was reported on Green Bank in 1881.

Bank St. Pierre has its eastern limit nearly on the meridian of 55° 20′ W., and attains its southern boundary in latitude 45° N., longitude 56° W. The bank then trends about NW. for about 140 miles to its western margin, in latitude 46° 55′ N., longitude 57° 30′ W.

The soundings on this bank vary from 20 to 45 fathoms, the ordinary bottom being sand and broken shells.

Nova Scotia Banks.—Although our acquaintance with the nature and extent of the principal banks which mark the approaches to Nova Scotia can not yet be deemed perfect, our knowledge of their limits and depth of water has been greatly increased during late years. Much useful information respecting the outer banks was diffused by the French

charts in 1858; the surveys of La Have and Roseway Banks by Captain Shortland, Royal Navy, in 1859, were satisfactory in every respect; and, later still, the offshore soundings by Captain Orlebar, Royal Navy, in 1864, are valuable additions to our hitherto scanty knowledge of the inequalities of the various banks which lie off the much-exposed and dangerous coast of Nova Scotia. Of these banks the principal in extent and most important in position are the Banquereau and Sable Banks, the former being the easternmost of what may be correctly designated the Nova Scotia Banks.

Banquereau Bank, with 15 to 50 fathoms, is an extensive plateau of sand, gravel, and shells, and is distinguished from contiguous banks by numerous flat sea-eggs without prickles which are found on the bottom. It extends from about latitude 44½° N., longitude 57¼° W., in a westerly direction 120 miles to the meridian of 60° W. This bank is separated from Bank St. Pierre by a deep gully 50 miles wide, having from 200 to 300 fathoms muddy bottom; and from the NE. bar of Sable Island by another gully of deep water 12 miles across its narrowest part and 140 fathoms deep.

On referring to the chart it will be seen that its shoalest part, with 15 fathoms, in latitude 44° 35′ N. and longitude 57° 54′ W., is the apex of a ridge (having less than 30 fathoms) upwards of 40 miles in length in a NE. and SW. direction; and that relatively with the dangers off Sable Island it is not only a safe offing for vessels intending to pass to the northward of the last named danger, but by keeping, if possible, in the same parallel, the long and continuous line of comparatively shoal water, would enable a vessel under ordinary circumstances to feel her way with some degree of confidence until she has passed to the westward of the meridian of Sable Island.

Misaine and Canso Banks.—Misaine Bank lies to the northward of Banquereau Bank, between the latter and Scatari Island, and between its NW. edge, with 60 fathoms, and a similar depth on the outer edge of a bank extending from the shores of Cape Breton Island, there is a deep gully 20 miles wide, with from 70 to 136 fathoms. The least water yet found on this bank is 36 fathoms, the general depth being more than 40 fathoms, with a bottom of stones and broken shells. The outline of the bank is very irregular; its eastern limit is in latitude 45° 25′ N., longitude 58° 10′ W., and its western extremity is connected with Canso Bank by the 60-fathom line.

The least water on Canso Bank is 35 fathoms, sandy bottom; the bank is separated from the north end of Middle Ground by a space of deep water with 112 fathoms, and from the bank extending from Cape Canso by a narrow deep-water channel with 84 fathoms.

Artimon Bank, situated at the east end of the deep-water gully separating Misaine Bank from Banquereau, is of small extent, the least water being 37 fathoms, over a bottom of stones with star fish and sea-eggs.

Middle Ground, about 30 miles to the northward of the west end of Sable Island, has been reported to have as little as 10 fathoms, although 15 fathoms was the least water obtained on examination. The bank is about 35 miles in length NW. and SE., with depths varying from 15 to 30 fathoms, and is separated from the west end of Banquereau Bank by a gully 3 miles across, with 100 fathoms. Its inner end extends to within 35 miles of Cape Canso, the distance between being occupied principally by a submarine valley, having in one locality a depth of 140 fathoms.

If in foggy weather, soundings should be struck within the 30-fathom line, they will impart confidence in making the coast of Nova Scotia, as the middle of the bank is in about the same parallel as the entrance of Halifax Harbor.

Sambro Banks consist of two banks; the eastern is about 12 miles in length, within the 60-fathom line, and lies SE. 36 miles from the same depth south of Sambro Ledges. The western bank, with 52 fathoms, sand and gravel, is about 4 miles in extent and separate from the eastern bank by a channel 10 miles wide, with 98 to 100 fathoms, stones. These banks are surrounded by deep water, there are other detached patches of less than 60 fathoms in the neighborhood, not yet accurately defined.

La Have Bank.—The northeastern shoal plateau of this bank, with from 45 to 50 fathoms, sand and stones, is 32 miles in length north and south by 15 miles broad; the north end being about east, nearly 60 miles from Baccaro Point. Another bank, with 45 to 50 fathoms, exists to the westward of the south end of the above, from which it is only separated by a shallow gully with 53 fathoms.

The 60-fathom boundary of the bank is well defined all round, and includes within its limits Brown Bank, described hereafter.

Roseway Bank.—The shoalest part of this bank, with from 31 to 40 fathoms, stones and pebbles, is about 11 miles in length, and its center is on the same parallel as Cape Sable light-house and the north end of La Have Bank. Between the 60-fathom lines of La Have and Roseway Banks there is a deep channel with from 70 to 100 fathoms; whilst inshore, Roseway Bank is connected by a narrow neck, with the 60-fathom line of the bank extending along the coast.

Brown Bank, within the 50-fathom line, is 55 miles in length, with an average breadth of 15 miles. It lies to the westward of, but contiguous to, La Have Bank, and with it forms an almost continuous bank, following the line of coast off Cape Sable at the distance of 50 miles off shore.

Near the western extremity of Brown Bank is a sandy rise about 10 miles long north and south, with from 24 to 30 fathoms, the center of which lies about 50 miles SW. of Cape Sable.

Outside the 50-fathom line of Brown Bank there is a deep-water channel 25 miles wide, separating it from the 60-fathom line at the northeastern extremity of George Shoal, off the Massachusetts Coast.

Inside Brown Bank there is a narrow deep-water channel with above 60 fathoms, dividing it from the same depth on the edge of the shore bank, which follows, about 30 miles off, the line of coast from Cape Sable to as far as Bryer Island, abreast which the deep water approaches within 5 miles of the shore.

There are many inequalities on the main shore bank, off the SW. coast of Nova Scotia, which it would be useless to describe in detail in these directions, inasmuch as they are clearly delineated on the chart, by studying which the navigator will have a comprehensive idea, not only of the positions of and depths upon the various small patches, but also of the relative positions of the larger banks.

Birds.—The approach to the banks is generally evidenced by an increasing number of sea fowl around the vessel. Hagdowns, a species of gull, heavy of flight, are seen all across the Atlantic, but on the banks they become very numerous, as well as divers and other sea fowl.

Fish.—All the banks off Newfoundland and Nova Scotia abound in cod and other fish, and during the summer season a large fleet of fishing vessels are found at anchor upon them. The ordinary track of the mail steam vessels is left open, but north and south of this unoccupied track numerous American, French, and Canadian vessels are employed in the cod fishery, especially on the Great Bank of Newfoundland, Bank St. Pierre, Banquereau and Green Banks, and Middle Ground.

Sable Island is formed of two nearly parallel ridges of sand shaped like a bow, concave to the northward, and meeting in a point at either end. Its whole length, following the curve, and including the dry parts of the bars, is 22 miles, 20½ miles in a direct line across the curve. Its greatest breadth is exactly one mile. In some parts it is wholly or partially covered with grass; in others, scooped out by the winds into crater-shaped hollows, or thrown up into sand hills, not exceeding the height of 75 feet above high water. Between these ridges a long pond named Salt Water Lake, said to be gradually filling with blown sand, but still in some parts 12 feet deep, extends from the west end to the distance of 11 miles; and a low valley continues from it 6½ miles more to the NE. end of the island. The entrances to this pond have been for some time closed, the sea flowing in over the low sandy beach on the south side, and at the west end only in high tides and heavy gales.

When seen from the north from a distance of 9 or 10 miles, the island presents the appearance of a long range of sand hills, some of which are very white. From the south, the range of white sand appears more continuous, and very low towards the west end. On a nearer approach many of the sand hills are seen to have been partly removed by the waves, so as to have formed steep cliffs next the sea. In other parts they are covered by grass, and defended by a broad beach, which, however, can not be reached without passing over ridges of sand covered with only a few feet water. These ridges, which are parallel to the shore at distances not exceeding ⅓ of a mile, form heavy breakers, and are dangerous to pass in boats when there is any sea running.

Productions.—The amount and variety of vegetation on this gigantic sand bar is extraordinary. Besides two kinds of grass, there are wild peas and other plants, affording subsistence to wild horses and rabbits, as well as to the domestic cattle belonging to the establishment. There are no other animals on the island, excepting rats, which have come on shore from wrecks. There are also four or five kinds of edible berries in great abundance, and many flowers and shrubs, but no trees.

Fresh water can be obtained in almost any part by digging down a few feet into the sand. Seals and abundance of wild fowl frequent the island in their seasons.

The fisheries around the island are exceedingly valuable, but the danger of remaining near its formidable bars has hitherto restricted the number of vessels engaged in them.

The Establishment on Sable Island for the relief of shipwrecked persons is situated on the north side of the island between the pond and the sand hills, and consists of a comfortable house for the superintendent and his family, buildings for the men and the occasional accommodation of shipwrecked persons, for storing provisions and other property saved from wrecks, workshops, stabling, etc.

The superintendent has under him sixteen men, who are stationed as follows, viz, the superintendent and six men at the main station which is at the west flagstaff; at the west end lighthouse, the lighthouse keeper and his assistant; at the east end, the lighthouse keeper, his assistant, and two boatmen; at the middle station, two boatmen; and at the foot of the lake station, two boatmen. In addition there are generally two or three extra men. These stations are all connected by telephones.

The staff, with their families, number about forty-six persons, and no one is allowed to reside on the island without the authority of the marine department.

No wrecks can take place on the island at a greater distance than 6 miles from some one of these posts; and in the event of one occurring the outposts report to the superintendent at the principal establishment.

Life-saving Apparatus.—Life-boats are stationed at the east end, and at the main station, besides the surf boats. There is also a rocket apparatus at the main station, and a life car at the east end.

During fogs and snow storms mounted men patrol the beach to ascertain if any wrecks have taken place.

The West Flagstaff, which points out the position of the principal establishment, stands on a sand hill 40 feet high, and with its crow's nest, or lookout, 100 feet above the sea, is a conspicuous object on the north side of the island.

The East Flagstaff, 40 feet high, is also a conspicuous object, standing on a sand hill on the north side of the island.

The Middle Flagstaff is farther inland, near the east end of the salt water lake, and 3¾ miles to the westward of the East Flagstaff.

The West Bar dried about ¾ mile from the end of the grassy sand hills. There were several patches nearly dry about a mile farther out, and then 9 miles of heavy breakers, succeeded in bad weather by 7 miles more in which the depth increases from 5 to 10 fathoms, and where there is usually a great ripple and a heavy cross sea. Since 1852 the sea has encroached on the land and covered places where the grass formerly grew. The direction of this bar is N. 60° W. for the first 12 miles, thence west for the remaining distance; the whole extent of the bar from the end of the grassy sand hills to the depth of 10 fathoms being 17 miles, beyond which the water deepens gradually to the westward for many miles.

The East Bar during fine weather dried about 4 miles from the end of the grassy sand hills. At the distance of 1¾ miles, a small sand hill about 10 feet high and with some grass on it has accumulated around a wreck since 1820. The 4 miles of dry sand are succeeded by 8 or 9 miles of heavy breakers; the whole length of this bar, from the grassy sand hills to the depth of 10 fathoms being 14 miles. Since 1852 the sea has receded, and vegetation now appears in places which were covered by water. Its direction is N. 40° E. for the first 7 miles, beyond which it curves gradually, till it terminates to east. The ridge of sand with a depth of from 10 to 13 fathoms on it, and with often a heavy cross sea, continues for 10 miles farther to the east, and then ends abruptly, the depth increasing, in a distance of 3 miles farther in the same direction, to 170 fathoms, in the channel between Sable Island and Banquereau Bank.

Vessels should be careful not to be caught within the crescent in a strong gale from the northward, when the accelerated ebb tide, setting directly towards and over the bars, would render her situation extremely dangerous. Both the bars are extremely steep on the north side, the east bar especially so, having 30 fathoms water close to it. To the southward, on the contrary, the water deepens gradually for many miles, and renders it difficult to account for the great number of shipwrecks on that side of the island and its bars, unless they are to be attributed to the neglect of the lead.

Wrecks on the bars are of course far more dangerous to life than those that take place on the island, and it is important in such cases to know on which bar the vessel is, and the consequent direction in which to seek for safety on the island. This information, when the island is hidden by fog or the darkness of night, must be sought by observing the direction of the line of breakers, which on the east bar is between NE. by N. and ENE. until near its outer extremity, whilst on the West Bar it is WNW.

Anchorage.—Off the north side of Sable Island, excepting near the east end, where the deep water approaches too near the shore, there is

good anchorage in 5 to 10 fathoms, from one to 2 miles off shore. The bottom is fine sand, and holds well, but the sea is so heavy, excepting with offshore winds, that a vessel should weigh immediately on the first indications of a wind from seaward.

Directions.—In approaching the anchorage off Sable Island from the northward at night or in thick weather, the lead should be kept constantly going; and after passing the Middle Ground, distant about 25 miles to the northward of the island, great caution should be used, and the vessel should be certain of her position; for the east end of the island and the East Bar are very steep on that side.

Vessels seldom anchor off the south side of the island, because of the prevailing heavy swell from the southward; but they may safely approach by the lead on that side, taking care not to become becalmed in the heavy swell, and in the strong and uncertain tides and currents near the bars.

The landing is in general impracticable on the south side, excepting after a long continuance of northerly winds; and on the north side boats can land only during southerly winds and fine weather; but there are surf boats at the establishment, which can land when ordinary boats would swamp.

Tides.—It is high water, full and change, on the north side of Sable Island at 7h. 30m., and on the south side about an hour earlier; springs rise about 4 feet. The tidal streams are much influenced by the wind. The ebb sets to the southward on and over the bars, often at the rate of 1½ or 2 knots; the flood at a much less rate in the contrary direction.

Currents.—Of the great currents in this part of the ocean, it is generally admitted that the Gulf Stream, after passing along the coast of the United States, is deflected to the eastward between the parallels of 35° and 40° N., and continuing on in about an ENE. direction passes south of the tail of the Great Bank of Newfoundland during the winter months, but extends over the south end of the bank during the summer season.

From a combination of causes, such as prevailing, or lately prevailing winds, and the preponderance of polar or tropical waters, the Gulf Stream has been found to have an oscillatory motion, so that it would be impossible to assign any definite limits to the margins of this great ocean river.

The velocity of the Gulf Stream across the south end of the Great Newfoundland Bank is very variable, but at times amounts to more than a knot an hour in an ENE. direction. One result of this influx of warm water into a cold atmosphere is the production of the dense fogs so frequently experienced on the banks, and which materially embarrass and retard navigation.

Although the current between the Grand Bank and Newfoundland commonly sets to the SW., sometimes at a rate of nearly one mile per

hour, it is not always so; and near the shore, in moderate weather, it even changes with the wind. At these times during the flood it runs to the SW., and during the ebb to the NE., the former being the stronger.

To the westward of Cape Race, it must also be remembered that the current so frequently setting to the NW. one mile per hour in the offing is not invariable in strength or direction, but is affected greatly by the prevailing wind. It is observed generally to run in upon the eastern side of the great bays indenting the south coast of Newfoundland, and out on their western side. In the offing it is influenced by the winds, and near the shore by the tides, so that during springs the stream of ebb runs weakly to the SE., and the stream of flood to the NW., the latter sometimes 2 miles per hour round the headlands.

Admiral Cloué, of the French Imperial Navy, during his survey of Banquereau Bank, remarks that he observed the currents to be very irregular in strength and condition, for they sometimes change all round the compass in 24 hours, and have been known to set in a contrary direction to the prevailing wind. The ordinary strength of the current is about half a knot; but it occasionally attains a velocity of more than 2 miles an hour. The fact of the transportation of field ice from the north to the latitude of 42° N., indicates the certainty of a current ordinarily setting to the SW.

Arctic, or Labrador Current.—In addition to the warm waters of the Gulf Stream is the cold ice-bearing current from the Arctic seas, which passes to the southward, along the coast of Labrador, at rates varying from 10 to 56 miles a day, and being very much influenced near the coast by the winds, it is difficult to estimate the direction or effect for any particular day, but that the general trend is to the southward is shown by the passage of many icebergs; these, however, have been observed to travel north without any apparent reason.

Abreast Labrador this cold current appears to extend as far to the eastward as the meridian of 40° W., from thence in its course to the southward it is met by the northern edge of the Gulf Stream, the position being nearly always distinguishable by the rips caused by the interlacing of the waters of the two currents.

A branch of the Arctic Current flows through the Strait of Belle Isle into the Gulf of St. Lawrence, and again enters the Atlantic in a southeasterly direction between Cape Breton Island and Newfoundland.

This branch current is retarded by easterly winds which sometimes cause it to run in a contrary direction; it is frequently deflected to the southward toward Cape Breton Island by those from the northward, and indeed winds generally act so powerfully and irregularly on the rate and direction of the current and tides in this entrance of the Gulf of St. Lawrence, as to render it difficult to say anything respecting them that is not subject to exceptions.

Vessels bound for the Gulf of St. Lawrence, and wishing to make

the land of Cape Breton Island, should, if the weather be foggy, shape a course so as to pass a few miles north of Scatari Island, and most frequently after passing the meridian of Flint Island the fog will clear. The SW. wind, which is accompanied by a dense fog at Scatari, becomes clear and fine during its passage over the warm land.

When approaching the entrance of the Gulf of St. Lawrence, the current generally sets to the southward, on the Cape Breton Island side of the strait, but on the Newfoundland shore it has frequently been found setting to the northward about one knot per hour.

To the eastward of Cape Breton Island the current intermingles with the main branch of the same current, which, after skirting the east coast of Newfoundland, turns to the westward round Cape Race, thence passing along the SE. Coast of Nova Scotia, continues on to the southward along the American shore to Florida, preserving in a marked degree its distinctive character as a cold current inside the warm waters of the Gulf Stream.

Along the SE. coast of Nova Scotia the offshore current generally sets to the SW. at an average rate of rather more than ½ mile an hour, but both direction and strength are much influenced by the wind. After a continuous westerly blow the current will run to the eastward about ½ knot per hour; and after a prevalence of easterly winds, the usual southwesterly current is accelerated to more than a knot an hour; in either case the set will tend to increase the vessel's distance from the shore.

Between Ram Island and Cape Sable, within 8 miles of the shore, the current is governed by the Bay of Fundy tidal stream, the flood setting to the westward and the ebb to the eastward.

The formation of the extensive banks of Newfoundland and Nova Scotia is probably to be attributed to the meeting of the above diverse currents; for the loose delta of the numerous rivers flowing into the Gulf of Mexico, and borne along in suspension by the force of the Gulf Stream, as well as the earthy matter which icebergs are ever bringing from the north, are alike deposited within the comparatively limited space where the two streams come into collision.

A current setting to the southward and southwestward at rates varying from 1½ to 3¾ knots an hour, and skirting the eastern edge of the Great Bank of Newfoundland, was observed in December, 1884, between latitude 43° 6′ and 43° 25′ N., and longitude 49° 2′ and 49° 37′ W., by Mr. Richard Ladd, navigating officer, telegraph S. S. *Minia*.

Uniform System of Buoyage.—The following uniform system of buoyage is generally adopted in the ports and channels on the Canadian coasts:

Approaching from seaward, all buoys on the starboard side of a channel are painted red, and, if numbered, marked with even numbers, and should be left on the starboard hand.

All buoys on the port side of a channel are painted black, with odd numbers, if any, and should be left on the port hand.

Buoys painted red and black in horizontal bands mark obstructions on middle grounds, and may be left on either hand.

Buoys painted white and black in vertical stripes mark midchannel, and should be passed close to avoid danger.

All other distinguishing marks to buoys are in addition to the foregoing, and indicate particular spots, a detailed description of which will be given when first established.

Perches, with balls, cages, etc., will, when placed on buoys, be at turning points, the color and number indicating on which hand they should be left.

The rule for coloring buoys is equally applicable to beacons and other day marks, so far as it may be practicable to carry it out.

Ice.—One of the most fruitful sources of danger to which vessels are exposed are the immense masses of ice in the form of bergs, and extensive fields of solid, compact ice which are released at the breaking up of winter in the Arctic regions, and drifted down by the Labrador Current across the direct and much frequented route between the principal ports of Western Europe and North America. In this route ice is more likely to be encountered from April to August, both months inclusive, although icebergs have been seen during all seasons of the year north of the parallel of 43° N., but not often so far south after August.

These icebergs are frequently several hundred feet high, and of vast extent; they have occasionally been seen as low as latitude 39° N., and in positions to attain which the Gulf Stream must have been crossed. Such phenomena have been attributed to the warm waters of the Gulf Stream overrunning the cold Arctic Current, whilst the latter, retaining its progress and direction as a submarine current, transports the deeply-immersed ice islands into and across the Gulf Stream.

On this subject an able authority has remarked: "No impulsion but that of a vast current, setting in a southwesterly direction, and passing beneath the Gulf Stream, could have carried these immense bodies to their observed positions on routes which cross the Gulf current in a region where its average breadth has been found to be about 250 miles."

In the latitude of St. Johns, Newfoundland, icebergs have been fallen in with as far east as the meridian of 40° W., being the eastern margin of the cold Arctic Current already described. Further south, between the parallels of 40° and 45° N., they have been seen as far east as 39° W.

From latitude 38° 40′ N., and longitude 47° 30′ W.—which under ordinary circumstances may be deemed the most southerly position in which to expect icebergs—their probable boundary line to the westward would be nearly in a straight line towards Halifax to as far as longitude 61° W.

Instances of an exceptional nature are on record of icebergs having been seen bordering on the parallel of 40° N., within 60 miles WNW. of the island of Corvo; and of another having been passed in latitude 36° 10′ N. and longitude 39° 0′ W. Ice fields have been fallen in with in the latitude of Cape Race, on the meridian of 45° W., and also in latitude 42° N. and longitude 50° W.

Under ordinary circumstances the ice does not reach so far south as Cape Race before April, so that sailing vessels leaving England in March have often entered the Gulf of St. Lawrence without being impeded by ice. When in the supposed vicinity of ice a good lookout is essentially necessary, for even during a fog, or the darkest night, the position of an iceberg may be ascertained by a peculiar whitening of the fog—known as *ice blink*—which frequently renders them visible at some distance.

Generally on approaching ice there is a marked diminution in the temperature of the air and sea, especially of the latter. The indications of the thermometer should therefore never be neglected, though it must not be assumed to be an infallible guide.

Vessels should if possible always pass to windward of icebergs to avoid the loose ice floating to leeward.

PASSAGES.

Southern Route.—Sailing vessels, or steam vessels with small power, leaving the English or St. George Channel, and bound for Halifax, after making the necessary westing to insure not being set into the Bay of Biscay, should shape a course for Madeira, which may be passed at any convenient distance on either side, except during the months of November, December, and January, and when it is preferable to pass to the westward of it on account of the strong westerly gales which prevail, producing eddy winds and heavy squalls on the east side of the island.

After passing Madeira steer to the southwestward until within the northern limit of the NE. trade wind (which will be entered when the sun is near the northern tropic, between the parallels of 31° and 32° N., and when near the southern between 30° and 31° N.), when the course should be altered gradually to the westward, keeping within the limit of the trade wind.

Cross the meridian of 40° W. in latitude 26° N., which parallel should be preserved until the meridian of 48° W. be reached, when a more northerly course should be pursued, passing about 200 miles to the eastward of Bermuda, thence a course may be steered for Halifax, observing that in crossing the Gulf Stream when between the parallels of 38° and 42 °N., the current will be found to set about ENE. at the rate of 20 to 70 miles a day, attaining its greatest velocity when the sun is far to the northward, or on the return of that body to the equator. The color of the Gulf Stream water is a deep indigo blue, and the junction with ordinary sea water distinctly marked; on crossing the northern limit of the stream the temperature has been observed to decrease 30°.

CHAPTER II.

BAY OF FUNDY—NORTH COAST—MERIDIAN POINT—MAINE, TO AND INCLUDING CUMBERLAND BASIN.

General Remarks.—The Bay of Fundy is an extensive arm of the sea on the east coast of North America, separating the province of New Brunswick from the southwestern part of Nova Scotia, and extending upwards of 100 miles in an N. 53° E. direction, with an average breadth of about 30 miles.

At the entrance of the bay are Grand Manan and smaller islets, as well as numerous dangers; on the north side are Passamaquoddy and other bays, as well as the harbor of St. John, a place of considerable commercial importance. The head of the bay is divided by a tongue of land into two branches, viz, Chignecto Channel on the north, and the noble Basin of Mines on the south.

The Bay of Fundy is deep, but the navigation is rendered not only difficult, but dangerous, by numerous off-lying dangers fringing the approaches, by rapid and uncertain tides, as well as by the frequent occurrence of dense fogs.

Pilots.—With the exception of St. John and St. Andrews pilots, and possibly a few at Yarmouth, there are no regular pilots for the Bay of Fundy. The fishermen and coasters are generally well acquainted with the dangers and set of the tides in the localities they are accustomed to frequent, but as a rule they are not well informed respecting the depth of water.

The St. John pilot boats will generally be found to the southward of the line between Gannet Rock light and Bryer Island, and between Machias Seal Island and Little River on the coast of Maine. This latter locality as well as Cape Lepreau is frequented by St. Andrews pilot boats.

Grand Manan Island is included in Charlotte County, in the province of New Brunswick, and lies on the NW. side of the entrance to the Bay of Fundy. From the summit of the island the land slopes gradually to the eastward, where it is partially cleared and settled; but on the western side the shore terminates in steep cliffs, some of which are nearly 400 feet high. The northern end of the island and also the whole western coast can be approached within 200 yards, excepting in the immediate vicinity of Dark Harbor.

From SW. head the extreme dangers off Grand Manan Island, viz, Old Proprietor to the SE. and Machias Seal Island to the SW., are about 10½ miles distant; whilst the outer of an intermediate cluster of dangers southward of the island, known as Murr Ledges, are 7½ miles distant. It is evident, therefore, that this extensive range of dangers, many of which never uncover, increases the difficulty and danger of navigation, and renders extreme caution necessary.

During fogs, with southerly and southwesterly winds, it frequently happens that a clear space, a full mile wide, extends off the northern part of the island, a fact which should be borne in mind as it may facilitate making a good landfall.

The soil of Grand Manan is generally good and produces every variety of fir, beech, birch, and maple in size and quality adequate to all purposes for which they are generally used. The eastern coasts abound with fish.

Seal Cove.—Good anchorage may be obtained at the head of Seal Cove, between the southeastern shore of Grand Manan and Big Wood Island, in 4 to 5 fathoms over muddy bottom. With southerly gales a sea sets into Seal Cove when vessels require a good scope of cable. There is also good anchorage under the lee of Big Wood Island with easterly winds.

Buck Rock is a small rocky patch which uncovers at two-thirds ebb, lying off the SE. point of Grand Manan Island, about ¼ mile off shore, with deep water all around it.

Big Wood Rocks lie about ¼ mile off the NW. point of Big Wood Island, with 5 fathoms close outside them. The inner rock generally dries, but the outer has 4 feet of water over it.

Tides.—It is high water, full and change, at Seal Cove at 10h. 54m.; springs rise 20 feet, neaps 15 feet, and at Grand Harbor at 11h. 7m.; springs rise 21 feet, neaps 17½ feet.

Grand Harbor is only adapted for vessels of small draft. Vessels drawing 10 feet can be beached on the west side of the harbor.

Gull Cove, on the eastern shore of White Head Island, affords good shelter from all winds except those between north round by east to SE.

Anchorage may be obtained in the middle of the cove at about 300 yards from the shore in 5½ fathoms, sand.

Big Duck Island.—The anchorage under this island on its western side is in about 3½ fathoms, mud, with the west tangent of Long Island midway between High and Low Duck Islands, and the south point of Big Duck Island bearing N. 88° E.

A fog horn is established near the southern end of Big Duck Island. It gives one blast of 6 seconds duration every 35 seconds.

Big Duck Ledge.—To the southward of Big Duck Island, at the distance of ⅞ mile, is Big Duck Ledge, the highest part of which never covers. This ledge should not be approached on its south side nearer than ½ mile, nor should the narrow passage between it and Big Duck

Island ever be attempted; the other sides of the ledge may be approached within 200 yards.

Long Island Bay.—Good anchorage sheltered from all except northerly winds may be obtained within Long Island in about 3 fathoms, sand, with the east end of Farmer Ledge in line with the center of High Duck Island and the north end of Long Island bearing N. 30° E. Care must be taken on approaching this island to avoid a rock awash, which lies about ¼ mile from the north end of Long Island.

Flag Cove, situated in the northern part of Long Island Bay, affords anchorage in about 5½ fathoms, stiff clay, protected from all winds but those between S. 30° E. and S. 64° E.

In approaching this anchorage from the northward do not bring Swallowtail lighthouse to bear eastward of N. 37° E. until Low Duck Island begins to open out west of Long Island, in order to avoid a cluster of rocks which uncovers at last quarter ebb, at 400 yards off Flag Point.

Whale Cove.—In Whale Cove, near the north end of Grand Manan Island, a good temporary anchorage may be obtained in about 5 fathoms, but it is exposed to northerly winds.

Dark Harbor is an inlet, across the mouth of which the sea has thrown a shingle wall; near its south end there is a pier, and an opening available for small vessels at high water. Within the basin there is secure anchorage in 5 to 7 fathoms, mud.

Bradford Cove affords anchorage off a green bank in 8 to 10 fathoms water, about 300 or 400 yards offshore.

Grand Manan Bank is about 5½ miles long by 2 miles broad; the depths on it being from 24 to 47 fathoms, gravel and sand, with from 50 to 82 fathoms, mud and sand, all around, though according to some fishermen there are only 10 to 15 fathoms on its shoalest part.

At half flood the stream sets over the banks N. by E. and S. by W. about 1½ knots per hour, and during ebb attains an equal velocity in the opposite direction; it turns about ½ hour after high and low water at Seal Islands, and shows a tide rip of great extent.

There are two other banks to the southward of Grand Manan Bank, the northern of which is 5 miles long and one mile broad, with 28 to 48 fathoms on it, and lies 2½ miles from the SW. extreme of Grand Manan Bank; the southern, 2½ miles long and 2 broad with 36 to 50 fathoms on it, lies 6⅔ miles from the same point.

Steering for and sounding on these banks gives confidence when steering into the Bay of Fundy, especially during thick weather.

Machias Seal Island.—The island on which the light-houses stand is the larger of two islands, joined together at low water by a rocky ledge; and it is the most offlying of the dangers SW. of Grand Manan Island.

The island is about ¼ mile long, has an elevation of 28 feet, and near its center are the light-houses, which in line bearing N. 63° W. lead 4 miles seaward of Murr Ledges.

The fog signal is one 5-second blast every 30 seconds.

A small shoal, with only 13 feet water, lies ⅛ mile S. 69° E. from the eastern light-house on Machias Seal Island, with deep water in the channel between it and the island. The shoal shows a rip during the strength of the tide, and breaks in heavy weather.

Anchorage can be found in the eddy on the SE. side of the island, and a pilot can generally be obtained here. The St. Andrews pilots generally cruise off these islands.

Tides.—It is high water, full and change, at Machias Seal Island at 11h. 5m.; springs rise 18 feet, neaps 14¾ feet.

Southeast Shoal, with only 8 feet water, shows a rip during strength of tide.

Southeast Ledge breaks during heavy weather. There is probably less than 5 fathoms on it, as the rock is very abrupt, and the lead may not have touched the highest part.

North Rock, about 4 feet above high water, is of small extent, and from it the eastern light-house bears S. 15° W. 2¼ miles. There is a good passage between the rock and Machias Seal Islands.

North Shoal shows a tide rip, and breaks in heavy weather. From it the eastern light-house bears S. 16° E. 1⅞ miles; North Rock N. 60° E. 1⅛ miles.

Middle Shoal has deep water close to. It shows a large tide rip, and breaks in heavy weather. From it the eastern light-house bears S. 49° W. 5⅛ miles, and North Rock S. 69° W. 3½ miles.

Murr Ledges lie to the southward of Grand Manan Island, and consist of an extensive cluster of dangers 7 miles in length between Gannet Rock to the eastward and Bull Rock to the westward, and about 3 miles broad north and south.

Gannett Rock is a small, bare rock, about 15 feet above high water, with a landing place on its northern side. Best time for landing during rough weather is at low water.

The western side of the rock can be approached to within 100 yards, but the eastern side is rugged, and a detached rocky shoal with only 12 feet water lies S. 61° E. ⅛ mile from the light-house. Vessels should preserve an offing of at least ½ mile.

Half-Tide Rock uncovers at half tide, with deep water all around 100 yards off. The rock breaks at high water in rough weather.

St. Mary Ledge is the southernmost of Murr Ledges, and only covers at high-water springs, so that its position is almost always shown. The rock may be approached to within 200 yards.

Yellow Ledge is always uncovered. The ledge can be approached to within 400 yards except on east side, where there is a rock with only 4 feet water. This rock breaks at low water, with a moderate swell, and at high water in heavy weather.

Cross-Jack Ledge, about ⅛ mile in extent, only covers at high-water springs, but it should not be approached within ¼ mile.

A small rocky patch, which just uncovers at low-water springs and breaks in heavy weather, lies ⅜ mile S. 26° W. of Cross-Jack Ledge.

Long Ledge is nearly ⅜ mile in length, and has two points about 2 feet above high-water springs. From the point at the northern extremity of the ledge Gannet Rock lighthouse bears S. 86° E. nearly 3¼ miles, and Yellow Ledge S. 7° E. a little over 1¾ miles. Between Long and Yellow Ledges there is an extensive cluster of dangers almost connected with the former ledge, leaving a clear channel only ½ mile wide between Yellow Ledge and the southern rock of the cluster, which shows at first quarter ebb.

West Ledge, the northern end of which is just awash at high-water springs and deep water all round, lies with Gannet lighthouse bearing S. 85° E. 4 miles; there is a clear channel ⅞ mile across between West Ledge and the north end of Long Ledge.

Wallace Ledge, of small extent, uncovers at half ebb, and in bad weather breaks at high water. It may be approached on either side to within 200 yards, and lies with Gannet lighthouse bearing S. 75° E. 4¼ miles, and the highest part of West Ledge S. 5° E. ¾ mile.

Kent Shoal lies N. 9° E. 2 miles from Gannet lighthouse, and although some of the fishermen report as little as 12 feet on it, nothing less than 3½ fathoms at low water could be found on its examination.

Bull Rock, of small extent, with 2 feet on it and deep water all round to within ¼ mile, lies nearly midway between Gannet and Machias Seal Island lighthouses, the latter being distant 6⅜ miles S. 88° W.; Bull Rock shows a small rip during the strength of the tide and generally breaks.

Caution.—The soundings around Machias Seal Islands and Murr Ledges are irregular. The principal shoals in their vicinity have been described and the others do not amount to dangers; but it will be prudent for strangers to keep outside them. Should it be necessary, a vessel may anchor between Murr Ledges and Grand Manan Island.

Old Proprietor Shoal, the most off-lying of the dangers SE. of Grand Manan Island, uncovers at about half tide, and from it the south point of Three Islands bears N. 81° W. about 4 miles distant, and Gannet Rock lighthouse S. 61° W. 5⅜ miles.

The SW. head of Grand Manan Island seen open south of Three Islands, bearing N. 75° W. leads southwards, and Big Duck Island, open east of Black Rocks, bearing N. 16° W., leads eastward of Old Proprietor Shoal and all the dangers in its vicinity. Strangers should carefully avoid getting within the above leading marks.

Beacon.—On Old Proprietor Shoal is an iron spindle painted *red*, and surmounted by a cage 31 feet above high water. It should be visible in clear weather from a distance of 8 to 10 miles.

The Foul Ground to the westward of Old Proprietor Shoal is an irregular shoal, about ¾ of a mile from north to south; on its northern end a rock, which lies N. 61° W. ½ mile from Old Proprietor Shoal, is just awash at low water springs.

Rans Shoal is small and rocky with only 3 feet water on its shoalest pa , from which the south point of Three Islands bears N. 89° W. 2⅛ miles, and Gannet Rock lighthouse S. 45° W. 4⅜ miles.

Cheneys house—the only one on the largest of Three Islands—in line with the highest part of a ledge which never covers bearing N. 61° W., leads southward; and Mark Hill on Grand Manan Island open westward of Green Islands N. 38° W., leads westward of Rans Shoal.

Crawley Shoal may be considered to be a continuation of the Foul Ground in a northerly direction. The shoalest part has 3 fathoms water, and from it the higher of the two Black Rocks bears N. 4° E. 2¾ miles, the mark for it being the eastern side of Big Duck Island open to the eastward of Prangle Point and over the low part of Gull Rock.

Outer and Inner Diamond are rocky shoals, the highest parts of which are just dry at low water springs, bearing from each other N. 5° W. and S. 5° E. nearly ½ mile apart. From the Outer Diamond the south point of Three Islands bears S. 74° W., nearly 2¾ miles, and the higher Black Rock N. 24° E. 2½ miles.

The house on the northernmost of Three Islands, open northward of the north point of the easternmost of those islands bearing N. 83° W. leads northward of the Inner Diamond, between it and Tinker Shoal.

Tinker Shoal is about ¼ mile in length, and the highest part, which uncovers at low water, except at very small neaps, lies with Long Point, White Head Island, bearing N. 2° W., upwards of a mile distant, and the north point of Three Islands N. 86° W. 2¼ miles.

The SW. head of Grand Manan Island open to the northward of Three Islands leads northward of the shoals; and Mark Hill open southward of Pumpkin Island, which should be equidistant between it and White Head Island, bearing N. 50° W., leads between the Tinker and Brazil Shoals.

Brazil Shoal is an extensive danger, the SW. end of which uncovers at the last quarter ebb, and its NE. end just shows above low water springs; between these two patches, which are distant from each other about ½ mile, the bottom is very irregular.

From the SW. patch Long Point bears N. 41° W. one mile, and the higher Black Rock N. 43° E. 1⅜ miles. From the NE. patch Long Point bears N. 72° W. one mile, and the higher Black Rock N. 46° E. ⅞ mile.

Black Rocks are two in number, the larger and northeastern of the two being about 10 feet above high water, and separated from the smaller rock—4 feet above the same level—by a shoal passage.

The rocks are 200 yards apart, and bear from each other N. 38° E. and S. 38° W. They can be safely approached on either side to within 200 yards.

Bulk Head Rip extends about 2½ miles in a S. 52° E. direction from Black Rocks. The rip is caused by a sudden change in the bottom, though there is plenty of water through it.

Clarks Ground, which has 6 fathoms on it, lies with Old Proprietor Shoal bearing S. 43° W. about 2 miles distant, and also shows a heavy tidal rip on the ebb.

Tides.—About the Gannet Rock the flood sets N. 60° E., and ebb S. 60° W. from 3 to 4 knots per hour; but between the Gannet and Machias Seal Islands both direction and strength constantly vary. Near the latter the tidal stream sets N. 15° E. and S. 15° W. with a velocity of about 3 knots.

In the vicinity of Old Proprietor Shoal the stream turns about three-fourths of an hour before high and low water by the shore, respectively, and runs with a great but variable velocity, attaining in some places during the strength of springs a rate of 6 knots. The ripples in consequence are large, and cause the surface to assume a boiling appearance, rendering the dangers indistinct.

Strangers are therefore strongly recommended to keep outside the clearing marks for Old Proprietor Shoal; otherwise the best channel is inside all the dangers, along the coast of White Head Island, which may be approached on its southeastern side to about ¼ mile, except at Long Point, which should be passed at twice that distance.

Off Big Duck Island the inshore streams runs from 2 to 3 knots in a direction parallel to the trend of the coast, about N. 18°W. on the flood and S. 18° E. on the ebb. To the northward of Fish Head, as far as Long Eddy Point, the stream, both flood and ebb, sets about N. 30° W.; whilst further off shore the direction of the stream gradually merges into that of the bar tide, with a reduced rate of 1½ or 2 knots. Along the west side of Grand Manan Island the flood stream runs parallel to the shore about NNE. and the ebb SSW. 2 knots an hour.

Directions.—Vessels approaching Grand Manan Island from the eastward, and bound either to Seal Cove or round SW. head, should bring the latter open to the southward of Three Islands bearing N. 75° W., in order to clear Old Proprietor Shoal and Foul Ground; this course will lead in safety to Three Islands, which may be passed at the distance of ¼ mile, and thence as occasion may require to a suitable anchorage in Seal Cove.

If bound to Grand Harbor, after having passed Old Proprietor Shoal, proceed to the southwestward of Rans Shoal with Mark Hill open southward of Green Island bearing N. 38° W., but it would not be advisable to enter the harbor without a pilot.

A temporary anchorage will be found about ¼ mile from the NE. shore of Three Islands, in about 5 fathoms, sand, and safe from all winds which have no easting in them.

If proceeding to the anchorage under Big Duck Island from the southward, keep Big Duck Island open eastward of Black Rocks bearing N. 16° W. in order to pass eastward of Old Proprietor; after passing Black Rocks at a moderate distance bring the western tangent of Long Island, midway between High and Low Duck Islands, bearing N. 25° W., which will lead nearly ¼ mile outside the rocks off Prangle Point.

After passing these rocks bring the eastern points of Long and Low Duck Islands in line in order to avoid the long rocky ledge, mostly dry at low water, which extends nearly ½ mile to the southward of Big Duck Island, and anchor with the west tangent of Long Island midway between High and Low Duck Islands, and the south point of Big Duck Island bearing N. 88° E.

The channel between Grand Manan Island and the coast of Maine varies from 10 to 6 miles in breadth, and in all respects may be deemed the safest passage up the Bay of Fundy, as it is deep and clear of dangers, with the shores on either side steep-to, besides being the most advantageous with the prevalent winds which are from the westward.

Wolves, consisting of five islands thickly wooded, are 3½ miles in length and lie 8½ miles N. 15° E. from the north point of Grand Manan Island. These islands are from 60 to 100 feet in height, and along their shores, which are steep-to, temporary anchorages may be obtained in 12 to 20 fathoms.

The passage between East Wolf, the largest and northeasternmost of the group, and Green Wolf has deep water, and is about 600 yards wide; but vessels using this channel should borrow on the Green Wolf side, in order to avoid some rocks which extend about 600 yards off the southwest shore of East Wolf.

There is also a passage between Green and Flat Wolves, but the channel is narrowed to 200 yards by some rocks off the latter island, and should not therefore be taken. The remaining two passages are not navigable except for boats, nor should any of the channels between Wolves Islands be attempted by strangers, unless under unavoidable circumstances.

During thick weather, or with light winds and an adverse tide, vessels may anchor between Wolves Islands and Beaver Harbor, in 20 to 25 fathoms, good holding ground.

Whistling Buoy.—An automatic whistling buoy, painted black, with the name "S. Wolf" in white letters, has been placed southeastward of Southwest Wolf Island. The buoy is moored in 52 fathoms of water, with Southwest Wolf Island light bearing N. 41° W., distant 1½ miles.

Wolf Rock, small in size and always above water, lies about 400 yards off the north point of East Wolf, and is separated from another small rock to the eastward by a deep channel 200 yards wide. Both rocks should always be passed on their northern side, and not within a distance of 400 yards.

Coast of Maine, Englishman Bay.—The entrance to this bay is between Cow Point on the east, and Kelly Point on the west. These points are 7 miles apart, but the passage is obstructed by many islands, among which lead the different channels into the bay. From a line joining Kelly and Cow Points, the bay is 5 miles long to the entrance to Chandler River, at its northern end, and affords an excellent anchorage for the largest vessels, 5 and 6 fathoms being found as far up

as Great Head. The main entrance to Englishman Bay lies between Scabby Islands and The Brothers, between which the channel is 1¼ miles wide, and is unobstructed up to Shag Ledge, which must receive a good berth, owing to other ledges—bare at low water—which radiate in all directions from the main ledge.

For vessels of light draft, there is a good and perfectly safe channel from the eastward between Foster and Ram Island, and many coasters and fishermen make use of it in preference to the main channel. It is almost unobstructed up to Hickey Island, the only danger being the ledge off the northern end of this island.

In using the main entrance care must be taken to avoid the "Cods Head" a small rock—out at low water—which lies about ⅝ of a mile S. 34° W. from Hickey Island, and is not marked.

Scabby Islands, forming the eastern shore of the main entrance to Englishman Bay, consist of two small islands lying about N. 11° E. and S. 11° W. from each other, and close together. The eastern one is conspicuous for a high round head with one or or two dead pines, looking like masts, on its top; otherwise it is bare. The southern islet is lower than the northern, and is rocky and bare, except for a few dead trees on its western end.

The Brothers, forming the western shore of the main entrance to Englishman Bay, are two rocky islets, bearing about N. 66° E. and S. 66° W. from each other, with grassy surface, and with a scanty growth of fir clinging to their northern sides.

Foster Island, forming the northern boundary of the eastern entrance to Englishman Bay, is bare and rocky. It was formerly wooded, but is now cleared and covered with tree stumps. It is remarkable for the bleached appearance of these stumps, which resemble grave stones.

Ram Island, forming the southern boundary of eastern entrance to Englishman Bay, is a low rocky islet, with a scanty growth of stunted fir at its eastern end.

Roque Island lies in the middle of the entrance to Englishman Bay, and affords several excellent harbors of refuge.

Shorey Cove is a most excellent harbor, sheltered from all winds, with good anchorage in from 2 to 3 fathoms, soft bottom, and no obstructions.

Roque Island Harbor also affords good anchorage and excellent shelter for vessels. It may be entered from the westward through Roques Island Narrows, between Roque Island and Great Spruce Island.

There is also a passage from the east between Halifax, Anguilla, and the Shot Islands on the south, and Lakeman Island on the north, but the best passage is that from the southward, between the Shot and Great Spruce Islands.

Great Cove, the bight in the main land just to the eastward of Calf Point, affords good anchorage and shelter from all winds. In case of

southerly winds vessels may run well into the cove and anchor under the lee of Calf Island.

Little Kennebec River is an excellent harbor of refuge, the anchorage being about 1¾ miles above the Point of Main, and the approaches perfectly safe.

Hickey Island, lying in the middle of the entrance to the Little Kennebec, is a low island, partly sand and partly rock, dotted here and there with spruce and fir and a stunted growth of pine. A reef, bare at low water, extends 200 yards from its southern end.

Tides.—It is high water, full and change, in Englishman Bay at 11h. 15m. Mean rise and fall of tides is 13 feet.

Ice.—The bay is generally closed by ice during a portion of each winter. In severe winters navigation by sailing vessels is impossible after the 15th of January, although steamers can usually keep running until the end of the month, when the bay is usually completely closed, remaining so until towards the 1st of March. The formation commences in the coves and sheltered places along shore and extends gradually out into the bay.

Machias Bay, just to the eastward of Englishman Bay, has a length in a north and south direction of 6 miles and varies between 2½ and 4 miles in width. The main entrance to the bay is between Cross Island on the east and Libby Island on the west.

The western channel, between Libby Island on the south and Ram and Stone Islands on the north, affords a good and nearly unobstructed passage, with good water.

There is a good channel, though unsafe for strangers, from the eastward, between Cross Island and the main land, the outer entrance being between The Old Man and Wash Island.

Cross Island, on the east side of the entrance to Machias Bay, is a remarkable looking island, crowned with a thick growth of sickly and stunted fir. A reef makes out from its southwestern end about 1½ miles in a westerly direction; otherwise the southern and western shores are remarkably bold and steep-to.

Libby Islands, forming the western side of the main entrance to Machias Bay, consist of two rocky islands, which, at low water, are nearly joined by the intervening reefs. The larger (western island) is entirely bare of trees, but has two houses on its summit, near its northern end. The eastern islet has a few dead fir and spruce near its northern end, but is otherwise rocky and bare of vegetation.

Stone Island, about one mile to the northward and westward of Libby Islands, is a barren, rocky island of moderate height, covered with a thick growth of small fir, except at its southern end, where is a remarkable round bluff head with a white face, called Stone Head.

Yellow Island, on the west side of the channel to the upper bay, is remarkable for being composed of nearly white rocks. At its eastern end is a high head called Yellow Head, which is bare except on top, where grow a few stunted fir trees.

Bare Island, lying just to the northward and westward of Yellow Island, is made conspicuous by two round bare rocky heads rising from the beach, the northern of which is high and precipitous; the southern being merely a huge bowlder. A few stunted fir trees grow about their bases. The rest of the island is low and rock fringed, except at its northern end, where there is a grove of small fir.

Chances Island, on the eastern side of the channel into the upper bay, is a round, wooded island of moderate height.

Averys Rock, lying exactly in the middle of the channel to the upper bay, is small, perfectly bare and rocky, about 20 feet in height, and can be passed on either side, the rule being to pass to the eastward. It is always steered for in coming up the bay.

Larrabees Cove, on the western side of the bay, affords excellent anchorage in from 2 to 3 fathoms, and is much used by the coasters bound to Machias. The entrance to the cove is between Salt Island on the south and Birch Point on the north.

Salt Island is conspicuous for the high, bare, bluff head at its eastern end. Stunted fir and spruce cling to its sides, and there is a small group of the trees on the eastern end of the head.

Round Island is rocky and of moderate height, and is covered with a thick growth of spruce and fir. Its eastern end is a round, precipitous head, also thickly wooded.

Holmes Bay, a wide and deep bay just to the northward of Spragues Neck, is so obstructed as to make directions useless. It is never used except by the small fishing boats belonging there.

Sanborns Cove, to the northward of Larrabees Cove, from which it is separated by Birch Point, is a large and deep cove, affording excellent anchorage for coasters in from 2 to 3 fathoms water.

Machias River, the entrance to which lies between Birch Point on the west and Holmes Point, the next point west from Long Point, is difficult of navigation and unsafe for strangers without a pilot.

Bucks Harbor, an excellent harbor of refuge, with good anchorage in from 3 to 6 fathoms water, makes off from the western side of Machias Bay, with its entrance between Bar Island on the north and Bucks Head on the south, and which is about 300 yards wide.

Bucks Head is a thinly wooded head of moderate height, descending on the east to a low, bare, rocky point. If entering the harbor, the head on that side will be found very abrupt and bold. A small rocky islet, destitute of vegetation, and with a line of ledges inside of it, lies about 200 yards off the head.

Bar Island, a high rocky island covered with small pine and spruce trees, has very precipitous faces, except at its southeastern end, where it descends into a low, rocky point.

Howards Bay, a beautiful unobstructed cove with deep water, makes off from the western side of Machias Bay about 1½ miles to the northward of Point of Main, extending in a northerly direction about ¾

mile. It is unfortunately unprotected from southerly and southeasterly winds. If obliged to anchor in this bay, vessels should lie in close under the eastern shore where a small cove makes in, affording good shelter from easterly and southeasterly winds.

Tides.—It is high water, full and change, in Machias Bay at 10h. 47 m. Mean rise and fall is 18 feet.

Little Machias Bay.—Just to the eastward of Machias Bay, and separated from it by a promontory averaging about 1¼ miles in breadth, Little Machias makes in about 2¼ miles to the northward. Its breadth varies from ¾ mile at its mouth, to 1⅜ near its head. It is of little importance, although it has good water, as its navigation is rendered dangerous by the ledges and rocks off its mouth, and it is open to southerly and southeasterly winds. The entrance lies between Dennisons Point on the east, and Davis Point on the west, but the channel is much obstructed and very unsafe for strangers. When in the bay the best anchorage will be found on the western shore in from 2 to 5 fathoms, but it is unsafe ground on account of being open to the southward.

Ice.—Little Machias Bay is usually closed to navigation during the winter, and in severe winters remains closed from December to April. For ice in Machias Bay, see "Ice in Englishman Bay."

Little River.—Two miles to the eastward of Little Machias Bay lies the entrance to Little River, which forms one of the best and most frequented harbors of refuge between Englishman Bay and Eastport.

The Coast between Little Machias Bay and Little River runs in a general ENE. and WSW. direction, and is generally high, rocky, barren, and steep-to.

Little River has a length from its entrance to the head of the river of 1½ miles, having a general westerly direction, but is navigable only to the town of Cutler on its northern bank and just above its mouth. It affords excellent anchorage for vessels in all winds, in from 2 to 5 fathoms, with a bottom of stiff gray mud.

Little River Island lies in the middle of the entrance to Little River. It is small and rocky, and is covered with a thick growth of stunted fir.

Little River Entrance lies between Eastern Knubble on the north and Little River Head on the south. There are two channels; one between Eastern Knubble and Little River Island, called the Main Channel, and one between the island and Little River Head called the Western Channel. The latter is shoal, but has no obstructions.

Eastern Knubble is a high, precipitous, rocky head, covered with a few spruce and fir trees. To the eastward of it will be seen a high, square, tower-like head, called Great Head, which is a good landmark if approaching the coast in thick weather and the light-house can not be seen.

Little River Head, forming the southwestern side of the entrance to Little River is of moderate height. With the exception of its northern

bluff, which is wooded with a small growth of fir, the surface has been cleared and the stumps of trees left standing.

These stumps serve to mark the head with certainty, as they have become so whitened by exposure as to present the appearance of gravestones.

On the southern and eastern faces of Little River Head large white spots have been painted on the rock just below the tops of the cliffs to enable vessels to recognize the entrance.

The northern banks of the river are all high and rocky, while the southern shores are lower, covered with bushes, and here and there groups of houses close to the shore line.

Just to the westward of Eastern Knubble is Eastern Head, high, precipitous, and crowned with trees. About 100 yards to the southward of Eastern Head, on the eastern shore of the river, is Eastern Head Ledge, to avoid which great care must be taken when entering by the eastern or main channel. It lies about NW. and SE., is 50 yards long, and uncovers at low spring tides.

If entering by the western channel, look out for Long Ledge, making out a considerable distance from the southern shore, opposite Little River Island, and is for the most part dry at low water.

Ice in Little River.—The harbor is unobstructed by ice even in the severest winters, and is accessible at all times by both sailing and steam vessels.

Between Little River and West Quoddy Head the coast has a general NE. and SW. direction, covering about 14 miles. It is generally high, rocky, and barren, and quite bold. The few coves and harbors to be found in this stretch are of no importance whatever as harbors of refuge, being generally badly obstructed by ledges, and affording protection only from northerly winds.

Tides.—It is high water, full and change, at West Quoddy Head at 11h. 12 m.; springs rise 21 feet, neaps 17 feet.

Sail Rocks, so called in consequence of their bearing some resemblance to a ship, lie about ¼ mile S. 41° E. from the light-house on West Quoddy Head.

Outside them to the eastward is a heavy race, so that when passing this locality it would be advisable to keep an offing from ½ to ¾ mile from the rocks.

Passamaquoddy Bay is an extensive inlet, about 10 miles deep, common to the State of Maine and New Brunswick. On the western side of the bay is the river St. Croix, being the natural boundary between United States territory and British America.

The bay, which is never closed by ice, affords excellent shelter, with a sufficient depth of water for vessels of heavy draft, whilst its waters swarm with fish, comprising herring, cod, and mackerel.

Across the entrance of the bay, about 10 miles wide, are numerous islands, rocks, and shoals, between which are three channels, viz: the

southern, the middle or ship channel, and the northern, known as Letite passage. The first, barely 200 yards wide across the narrows, is that between Campobello Island and the mainland to the SW.; the ship channel lies between Campobello and Deer Islands, and though the most circuitous, is the broadest, deepest, and best; whilst Letite passage, between Macmaster Island and the New Brunswick shore, is alike narrow and dangerous, being only available with local knowledge and during slack tide.

Campobello Island has several fine harbors, especially that of De Lute, on its NW. shore. The island is separated from the mainland by a narrow channel, for which at all times local knowledge is necessary.

With the exception of the SW. shore, the salient points of the island are steep-to and may be safely approached. On the eastern coast Herring Bay, Schooner and Mill Coves are well adapted for temporary anchorage; but when making for the latter care must be taken to avoid a three-quarter fathom patch about 400 yards off the north shore of the cove.

Head Harbor is formed between the island of that name and an indentation in the land at the NE. end of Campobello Island, and though small, is safe, easy of access, and without detached dangers.

De Lute Harbor, on the west side of Campobello Island, is well adapted for anchorage, though care must be taken to avoid Racer Rock, about 200 yards in extent, and with only 9 feet water; it lies a little to the eastward of the line between Man-of-War Head and the nearest point to the northward, and is about 400 yards distant from both.

Strangers should anchor to the westward of the line between the before-mentioned points, or, if wishing to go farther in, the services of a pilot should be obtained.

Friar Bay, also on the west side of Campobello Island, is an indentation between the village of Welchpool and Friar Head about a mile distant.

Here good anchorage may be obtained in about 10 fathoms in the line with Mark Island, just open of Friar Head, and as near as convenient to Welchpool, off which the 5-fathom line is only 100 yards distant. Vessels of moderate draft may lie alongside Queen Wharf.

The Main Entrance to the harbor of Eastport is by the ship channel, between Campobello and Deer Islands. The entrance by Quoddy Roads and Lubec Narrows is suitable only for small vessels.

Friar Road, known as the summer harbor of Eastport, affords good anchorage for vessels in summer time. The water is deep, however, ranging from 12 to 50 fathoms, except near the shore, and the tide runs strong. The road is also exposed to the full sweep of the NE. winds, and in the winter season, or in time of heavy gales, the anchorage is untenable. Vessels then seek shelter in Eastport Harbor proper, known as Broad Cove, which is commodious, and affords excellent shelter and anchorage. It is perfectly safe for strangers to enter at any time.

White Horse Island is a bare rocky islet, 68 feet high, of a whitish appearance, about 2⅛ miles N. 29° E. from Campobello lighthouse; and as the small islands in the neighborhood are covered with trees, White Horse Island is easily distinguished and serves as a beacon.

East Rock, with only one foot of water, lies about 300 yards off the east end of White Horse Island with the northern tangents of White and White Horse Islands in line.

Campobello lighthouse, open to the northward of White Horse, clears East Rock on its north side; and White Island, open south of White Horse Island, clears the danger on its south side.

North Rock, with one foot water, lies N. 27° W. ½ mile from the west end of White Horse Island, with Adam and Barn Islands apparently just touching, and has deep water close around.

Casco Island, of an irregular shape, nearly ½ mile in length, lies S. 85° W. from Campobello lighthouse. Its southern shore may be approached to 200 yards, but within it to the westward are two detached ledges, nearly equidistant from the west end of Casco Island, the depth in the channel between, about 600 yards across, being very irregular.

The clearing mark to pass westward of these ledges is the center of White Horse Island, seen between Spruce and Sandy Islands bearing N. 54° E.

Gull Rock, of small extent, is always visible, and lies 800 yards N. 57° E. from the NE. point of Casco Island. This rock may be safely approached to 100 yards, but the NE. point of Casco Island should not be neared within 300 yards, in order to avoid a rocky ledge.

Pope Island, about 300 yards in length, lies nearly in mid-channel between the shores of Campobello and Deer Islands and nearly a mile from Casco Island. In this latter channel is Green Island, as well as a large ledge which uncovers; these, with the ledges west of Casco Island, contract the navigable passage to about 400 yards, and thus render it difficult for a stranger.

Pope Shoal, a small detached spot with 11 feet water, lies about 200 yards S. 64° E. of the south point of Pope Island. A safe clearing mark is White Horse Island open to the southward of Casco Island.

Chocolate Shoal, with 10 feet on it, is of small extent, with deep water close around; it lies midway between the north point of Pope Island and the south point of Chocolate Cove in Deer Island. Deer Point open west of Indian Island clear of, but close to, this danger on its western side; whilst the west ends of Rouen and Cherry Islands in line leads between the shoal and Pope Island.

Indian Island is narrow and about 1¼ miles in length, with an elevation of 90 feet near its north end; it is partially cleared of wood and may be approached to 300 yards all around. The island lies on the eastern side of the south point of Deer Island, the narrowest part of the channel between the two islands being nearly ¼ mile.

Vessels to or from Passamaquoddy Bay may pass on either side of Indian Island in deep water.

Deer Island is 6½ miles in length with an extreme breadth of 2¾ miles; it is thickly wooded, and in some parts attains an elevation of 300 feet. From Little Harbor on its eastern shore round by south to Doyle Passage at its northern end the shore is steep-to, and may be approached to 300 yards, with the exception of the northern shore of North Harbor, where a small cluster of rocks lie about that distance off the high-water line; but the remainder of the coast, viz, from Little Harbor to the point of Deer Island, is studded with dangers, and its navigation should on no account be attempted by strangers, more especially as the approaches are also difficult.

Northwest Harbor, on the east coast of Deer Island, is a narrow indentation with deep water, but is only adapted for small vessels, and even these should moor, as the distance between the 5-fathom lines is only 100 yards. When off the entrance of this harbor the center of White Horse Island seen between Spectacle Islands bearing N. 81° E. leads into the anchorage.

Little Harbor being small and very shallow is only adapted for boats or very small vessels.

Clam Cove, on the west side of Deer Island, affords good anchorage with all winds excepting from south to west, in about 9 fathoms, with Floss Island on with rocks off North Point of the cove, and about equidistant from the points of the cove and the small islands within.

North Harbor, although temporary anchorage may be obtained off its entrance in about 10 fathoms midway between the NE. rocks and the SW. point of the harbor, it is inferior in every respect when compared with Clam Cove, only 1½ miles distant.

Port St. Andrews.—The town of St. Andrews is situated near the extremity of a promontory forming the eastern point of the river St. Croix. The whole town is commanded by an elevation at the back of the town, on which stands the fort and barracks.

The port is a tidal harbor, formed between the town and Navy Island, very limited in extent and shallow, the deepest water being from 12 to 14 feet at low water, in a space not exceeding 200 yards in extent; whilst its only channel, with one foot water, is less than 100 yards across at low water.

Off the south point of the promontory on which the town is built, a rocky ledge—which dries—extends to the southward about ½ mile, its outer end being marked by a wooden beacon which shows above the high-water level from 4 to 5 feet; this beacon is the type of all the others in the vicinity of the port.

Navy Island, upwards of a mile in length and with an extreme breadth of about 600 yards, lies within ½ mile of the main shore, the intervening space—with the exception of the narrow channel alluded to—being occupied by flats of stones and bowlders, which dry at low water, extending from the island and main shore.

The south end of the island, terminating in an abrupt white cliff,

appears like a wedge, and although only 37 feet high it becomes a conspicuous object when approaching from the southward or eastward. The SW. side of the island may be neared to 300 yards, but from its northern point a spit runs out and is nearly connected with the low-water line of the mainland NW. of the town.

Tongue Shoal is the outer extremity of the shoal ground extending to the southeastward of St. Andrews Promontory, and at low water dries ¼ mile, its highest part being about 18 feet above low-water springs. A beacon stands near its outer end, from which the east beacon bears N. 83°W. $\frac{7}{10}$ mile and the south spar buoy S. 73° W. nearly a mile.

Northwest Shoal.—This danger, about 300 yards in extent, dries from one to 3 feet at low water, and from the beacon which marks its center the NW. end of Navy Island bears S. 72° E., a long ¼ mile, and the north spar buoy is in line with the Roman Catholic church.

Tides.—It is high water, full and change, at Port St. Andrews at 10th, 50m.; springs rise 24 to 26 feet and neaps 20 to 22 feet.

The main stream of flood sets from between Grand Manan Islands and the coast of Maine in a direct line towards Cape Lepreau, and the ebb in a contrary direction; whilst the western branch, after passing along the shore of Campobello, is divided at its northern point, a portion taking an easterly trend, whilst the remainder passes into Passamaquoddy Bay through the various channels. In the Main or Ship Channel the stream attains in some places a velocity of nearly 5 miles an hour, but after passing Deer Island it becomes lost in the wide expanse of the bay, and is scarcely perceptible until it enters the river St. Croix, where it runs about 2 miles an hour, and increases its rate in the branch of the river leading to St. Stephen to between 3 and 4 knots.

Directions.—The usual difficulties attending navigation are much increased in the Bay of Fundy, where the mariner must expect to encounter frequent fogs of long duration, rapid and uncertain tides, and experience a difficulty in obtaining anchorage on account of the depth of water; these causes render the most unremitting attention necessary when frequenting this locality, in order to avoid the numerous dangers which mark the approaches to the bay.

Vessels bound to ports on the northern shore of the bay are recommended to use the channel west of Grand Manan Island rather than the passage on the eastern shore, for the coast of Manan is not only bold and without off-lying dangers, but during the summer months the atmosphere is generally clear on the United States shore, whilst the coast of Nova Scotia and the greater part of the Bay of Fundy are enveloped in fog.

Vessels bound to Passamaquoddy Bay, after passing through the Grand Manan Channel, should keep a moderate distance from the eastern shore of Campobello Island, and after rounding the northern point

steer to pass midway between the western shore of the islands and Casco, Pope, and Indian Islands, taking care on approaching Pope Island to keep White Horse Island open east of Casco Island, in order to avoid Pope Shoal.

Having rounded Cherry Island, steer for a mid-channel course between Deer Point and Dog Island, and after passing Kendall Head, the NE. point of Moose Island, either borrow on the Deer Island shore or bring the English redoubt over Eastport in line with Kendall Head in order to clear Floss Ledge; a closer mark to clear the same ledge is Point Pleasant Church, apparently touching the eastern tangent of Pleasant Island. Beyond this there are no dangers until approaching Navy Island, off Port St. Andrews; and in case of necessity good anchorage may be obtained in any part of Passamaquoddy Bay, in muddy bottom.

The best anchorage outside Port St. Andrews is to the NW. of Navy Island, in about 10 fathoms, clay, with the block house on Joe Point bearing N. 2° W. and the NW. beacon in line with the north end of Navy Island S. 69° E. When approaching the NW. shoal keep the south point of Navy Island well open to the SW. shore of the island until the NW. beacon is in line with the Kirk spire bearing N. 54° E., or do not shoal less than 10 fathoms.

River St. Croix.—Abreast Joe Point the river is nearly a mile across, and thence it runs in a N. 30° W. direction about 7 miles, where it turns abruptly to the westward, leading to Calais.

Dochet Island Shoal extends about a mile to the southward of Dochet Island. Two red-spar beacons mark this danger, the one on its southern extremity and the other off the east end of Dochet Island; both beacons should be left to the westward,

As vessels navigating the river St. Croix should always be in charge of a pilot, it is unnecessary to describe its shores in detail.

Chamcook Harbor lies on the eastern side of the promontory on which the town of St. Andrews stands, and is formed between Minister Island and the mainland. The entrance on the north side of the island, though marked by buoys, is only about 150 yards broad between the rocky ledges on either side of the entrance; and having as little as 9 feet water it is only available for vessels of large draft at a certain time of tide, although when inside there is good anchorage in a limited space in 7 to 8 fathoms.

Dock.—At the head of an inlet on the north side of the harbor is a wet dock sufficiently large to admit vessels of 34 feet beam, and a vessel drawing 16 feet may pass over the sill of the dock.

Hardwood and Hospital Islands lie to the eastward of Chamcook Harbor and off the entrance to Bocabec Bay; together they occupy a mile in length nearly east and west, and within them on their northern side good anchorage may be obtained in about 6 fathoms, with the south end of the Minister Island in line with the east end of Hos-

pital Island, and Mijic Bluff apparently touching the north end of Hardwood Island.

At low water a shoal extends 250 yards NE. from the light-house on Mijic Bluff.

In the bays and amongst the islands anchorage is to be found, but this locality is only frequented by vessels taking in cargoes, and on such occasions they should be under the charge of a native pilot.

L'Etang Harbor affords most excellent anchorage under all circumstances; it has two entrances, and area sufficiently large to accommodate a large number of vessels and is always open during the winter months, though loose ice is occasionally to be met with in the narrows, but never in sufficient quantities to prevent ingress or egress.

The depth of water in L'Etang Harbor—as well as in the adjoining anchorage known as Bliss Harbor—is sufficient for vessels of the greatest draft, whilst the tenacity of the holding ground is unusually great. As the rise and fall of tide is great vessels should moor slack. The town stands on a tongue of land known as L'Etang peninsula; supplies can not be obtained, the principal trade being in making casks for fish.

Bliss Island, off the entrance of L'Etang Harbor, is 1½ miles in length, about 50 feet high, and very irregular in outline; to the northward of the island, between it and Cailiff Island, is Bliss Harbor, a safe and commodious anchorage, where vessels may ride securely with every wind.

Off the western end of Bliss Island a rocky tongue extends 300 yards from the shore, and off its northern end very shoal water runs off to nearly the same distance.

Mink Island, a small rocky islet about 70 yards in extent and 20 feet high, lies about 200 yards off the NE. end of Bliss Island; it is moderately steep-to on its northern side, but should not be approached nearer than 200 yards on its eastern side.

Mare Rock, which dries at half tide, lies 400 yards off the eastern shore of Bliss Island, and is all but connected with the rocky spur extending to the SE. of Mink Island.

Colt Rock also uncovers at half tide, and lies 200 yards south of the Mare Rock, and about 400 yards from Bliss Island. The Colt and Mare Rocks are both steep-to on their eastern sides; there is no available passage within them to the westward.

Green Island, a small islet about 50 yards in extent and about 20 feet high, stands near the extremity of a rocky ledge extending from the SE. side of Bliss Island, and forms an excellent mark for clearing the ledge on which it stands; it should not be passed within 200 yards on its eastern side.

Pain Island, on the NW. side of the western entrance into Bliss harbor, is about 400 yards in extent, 109 feet high, and very steep-to on its southern side.

Man-of-War Rock.—The only danger to be avoided when using the western entrance is an extensive ledge 400 yards in length, and its

highest part, which uncovers at half-tide, lies one-third of the way across from Man-of-War Island to Bliss Island; this ledge narrows the main channel on Bliss Island side to about 200 yards, and great precaution is necessary when this passage is taken by a stranger, as the leading marks through are not very direct. The center of Mink Island apparently touching the northwestern point of Bliss Island leads through in mid-channel, and by keeping White Horse Island shut in by the high-water mark of Bliss Island leads clear of the ledge; the Bliss Island shore may be approached close-to.

There is a passage carrying 4 fathoms to the northward of Man-of-War Island and Boat Rock which may be used by vessels of light draft, and a narrow channel with 3½ fathoms between Man-of-War Island and Rock. The south point of Adam Island, seen midway between the high water of the Pain Island and the islet next to the NE., leads through this latter channel.

Pea Island, nearly 200 yards in length and about 25 feet high, lies close off a peninsula on the eastern side of the eastern entrance into L'Etang harbor; rocks dry off to the SW. 100 yards, and at the distance of 250 yards SE. of the island and the same distance from the shore is an isolated low-water rock.

Half-tide Rock is very small, and lies 250 yards off the pitch of Deadman Head; a wide clearing mark is the western end of McCann Island just open of Pea Island. It is marked by a black, spar buoy.

Roaring Bull, a cluster of low-water rocks which just cover, lie to the NW. of Pea Island nearly 400 yards, and narrow the channel of the eastern entrance between them and Mare Rock to about ¼ mile; the wharves at the west end of L'Etang harbor just in sight west of L'Etang Head clears Roaring Bull cluster on their western side.

Ice.—During the depth of severe winters ice has been known to extend down the L'Etang River as far as the south end of the peninsula, but the broad part of the harbor is never frozen, nor is Bliss harbor.

Back Bay is an indentation formed between the west side of Cailiff Island and the main shore, but is not adapted for anchorage save of a temporary nature.

Cailiff Rocks, situated just within the entrance of Back Bay, about one-third of the way across from the western shore, cover at half tide, are detached and about 300 yards in extent. The west end of Bliss Island in line with the south point of Pain Island leads southward, and the east end of Barn Island bearing S. 25° W. leads westward of Cailiff Rocks.

Black Bay is an indentation between Pea Point and L'Etang Head, and is moderately steep-to on its northern shore, but rocky spurs dry out 300 yards from the southern shore. Half a mile within the entrance, and in the center of the bay, are two small rocks which dry at three-quarters ebb, and vessels seeking a temporary anchorage should avoid approaching too near them.

Flea and Man-of-War Islands apparently all but touching lead into the bay clear of danger, and when the SE. point of Bliss Island appears to touch the small islet off the south point of Black Bay anchor in about 6 fathoms.

Deadman Bay, on the eastern side of L'Etang harbor, is open to the SW., and is only adapted for temporary anchorage with northerly or easterly winds.

Directions.—Western entrance.—Being to the NE. of White Horse Island, do not shut in Mascabin Point with Pain Island until the south end of McCann Island is in line with the NW. high-water mark of Bliss Island, in order to avoid the rocky spur off the western point of the latter, and then steer for Man-of-War Island until the middle of Mink Island is in line with the NW. point of Bliss Island, bearing N. 53° E., thence proceed with these marks in line nearly in mid-channel south of Man-of-War Rock, which will have been passed when Boat Rock is seen open eastward of Man-of-War Island.

After passing Man-of-War Rock anchorage may be selected either on the north or south sides of Bliss Harbor, as most convenient, in order to be beyond the influence of the tides. If on north side, a good position is in 6 or 7 fathoms, with Mink Island in line with the west end of Pea Island and the south end of Pain Island just shut in behind the north end of Man-of-War Island. On the south side, select a berth about mid-channel at the entrance of Fisherman Cove, in about 8 fathoms, with Pain Island just in line with, or shut in by, the west point of the cove.

If bound to L'Etang Harbor, after passing Man-of-War Rock, steer for Flea Island until Pain and Man-of-War Islands are apparently touching, and with these marks in line proceed between Flea Island and the Rocky shoal off the north end of Bliss Island. McCann Island may be approached close-to on the southern and eastern sides, but care must be taken to avoid a low-water rock off its NE. shore, and this may be done by borrowing on L'Etang Head, which is steep-to.

After passing this latter danger select an anchorage where convenient; a good position is about mid-channel abreast Little Sturgeon Cove, care being taken to keep clear of a rocky patch 200 yards off the northern shore.

Eastern Entrance.—Bring Jail Island, which lies off the town, in line with the east end of McCann Island, bearing N. 29° W.; this mark will lead through in mid-channel clear of all dangers up to McCann Island, after which proceed as before directed; or bring the wharfs at the west end of the town of L'Etang Head, bearing N. 23° W., and these marks will also lead through in deep water on the eastern side of the channel up to L'Etang Head; after which proceed to the anchorage as previously directed.

If wishing to anchor in Bliss Harbor, steer with either of the foregoing marks on, and when Pain Island is seen open north of Mink Island

steer for Flea Island until Pain and Man-of-War Islands are apparently touching, bearing S. 58° W.; thence steer with these marks on, and select an anchorage where convenient according to previous directions.

Beaver Harbor, ¾ of a mile broad between the entrance points and upwards of a mile deep, is open to the southward, and can not be deemed safe during strong winds from that quarter. Vessels should pass in and anchor on the western shore, in order to avoid a patch with 2¼ fathoms near the center of the harbor. Small vessels may anchor in a bay on the western side of the harbor opposite the village in 2½ fathoms clay, where they will be almost landlocked.

The vicinity of Bliss and L'Etang Harbors will prevent Beaver Harbor being frequented, save as a place of temporary anchorage.

Anchorage.—There is good anchorage between the light-house and a buoy, bearing N. 58° E. from it.

Maces Bay is an extensive bight, lying between Seeley Point and Point Lepreau, the latter being distant from the former nearly 8 miles S. 85° E., and from the line between the two entrance points the bay is nearly 5 miles deep, the coast line being broken into a series of smaller indentations, all of which afford anchorage for vessels taking in cargo, but only during fine weather, as the entire bay, with the exception of Seeley Cove, on its western side, is exposed to the full force of southerly and southwesterly winds.

Seeley Cove.—The coast between Beaver Harbor and Seeley Point may be safely approached to a distance of 400 yards. Seeley Point may also be rounded close to, and a good anchorage from westerly and southwesterly winds may be obtained on the south side of the cove in about 5 fathoms. Care must be taken to avoid the northern point of the cove, from whence low-water rocks extend nearly ¼ of a mile in a southerly direction.

Red Head, a cliffy wooded point on the western side of Maces Bay, lies N. 61° E. 3 miles from Seeley Point, the intervening coast being irregular, and, in addition to Seeley Cove, forming several small indentations; the cove next west from the head being clear of danger, with a moderate depth of water, is well adapted for temporary anchorage.

Mink Bay, on the western side of Maces Bay, lies between Red Head and Cranberry Point, and affords temporary anchorage on the NE. and NW. sides of Mink Island.

Pope Logan Islet, ¼ mile in length and 65 feet high, lies to the eastward of Red Head, and from its northern point a rocky ledge extends 300 yards, leaving a channel of the same breadth with 2 fathoms water between it and the lower water of the mainland. From the south point a rocky tongue extends to the SW. nearly in the direction of Red Head.

Mink Ledge, an extensive rocky patch to the eastward of the above islet, has a small portion on its eastern end which never covers, and

thus forms a natural beacon; it lies with the southern point of Pope Islet in line with the tangent of Red Head, and from it a series of rocky patches extend ½ mile in a N. 43° W. direction.

Mink Island, about ⅓ mile across and 104 feet high, lies ½ mile to the westward of Cranberry Point and the same distance from the shore of Mink Bay, the greatest depth in the latter channel being 3 fathoms. Outside the island a cluster of detached shoals extend ½ mile to the southward, whilst off its western point there is a detached ledge, which dries at the distance of ¼ mile in the direction of Mink Ledge.

Lepreau Bay, on the northeastern side of Maces Bay, lies between Cranberry Point and the shore north of Point Lepreau, and runs in to the northward to a shallow bight, where small vessels occasionally anchor beyond the reach of any very heavy sea. The only danger on the western side of the bay is off Cranberry Point, from whence a cluster of low-water and sunken rocks extend out 300 yards.

The Brothers are two small islets connected at low water, and form the eastern side of the entrance of Lepreau Bay. The larger island is 78 feet high, and is distant from the nearest part of Cranberry Point ¾ mile.

Lepreau Ledges extend from about a mile below Lepreau Basin to the SW. for a distance of 2 miles, and terminate in a point, which dries 18 feet at low water, at a distance of a mile from the eastern shore of Maces Bay. A good clearing mark for all the dangers on the eastern side of the bay is the tangent of Lepreau Bay, opposite Stay Point, seen just open west of the Brothers.

Tides.—It is high water, full and change, in Lepreau Bay, 11h. 18m.; springs rise 24½ feet, neaps 21 feet.

Directions.—Vessels from the westward intending to use any of the anchorages in Maces Bay should avoid shutting in the northern point of Seeley Cove with Red Head until past Pope Logan Islet, and (if making for the western side of Mink Bay) when Notch Hill bears N. 2° E. steer for it, and by so doing the dangers inside Mink Ledge and off Mink Island will be avoided, and an anchorage may be selected in about 5 fathoms, with Point Lepreau shut in by Mink Island, or off the western bight in 3 fathoms, with Red Head midway between Pope Logan Islet and the western shore, and Cranberry Point just shut in by the south end of Mink Island.

If intending to anchor on the NE. side of Mink Island continue to keep the north point of Seeley Cove just open of Red Head until Notch Hill is seen over the east end of Mink Island, when all the shoal water off Mink Island will have been cleared; when the sawmill bears north, steer for it, and anchor in about 5 fathoms, with Red Head shut in by Mink Island or in 3½ fathoms, with Cranberry Point in line with the middle of the larger of the Brothers, and the middle of Pope Logan Island in line with the west end of Mink Island.

If making for Lepreau Bay, continue with the north point of Seeley

Cove just open of Red Head until Notch Hill comes over the east end of Mink Island, thence steer for Stay Point, and when Cranberry Point and the north end of Mink Island are in line the shoal ground off the former will have been passed, and a course should be steered into the bay, bearing in mind that the square house at the head of the bay open west of Stay Point clears Hunter's Patch, southward of Stay Point, after which anchorage may be selected where most convenient in about 2½ fathoms.

A temporary anchorage for large vessels may be obtained in about 5 fathoms, with the north end of the larger Brother bearing S. 33° W., and Cranberry Point in line with the south end of Mink Island.

Dipper Harbor affords good shelter for small vessels, with winds from SW. round by north to east; vessels should anchor rather on the western shore, as some ledges extend off the eastern side.

Plumper Rock, lies about midway between Point Lepreau and Dipper Harbor, but close inshore, and may be avoided by keeping ¼ mile off shore.

Little Dipper Harbor should not be attempted without a pilot, as there are numerous dangers to be avoided. The place is only adapted for small craft.

Chance Harbor is about ½ mile broad at the entrance, by about a mile in depth in a northerly direction, and is easy of access. A flat rock, which dries at low water, lies 100 yards east of the western point, and may be cleared on its northern side by keeping Beldon house (near the beach at the head of the cove) open north of the south point of Beldon Cove. Further in, nearly in the middle of the harbor, there is another rock, which dries at half tide. Beldon house seen open south of the north point of the cove leads south of this rock.

The best anchorage for small vessels is, in about 2½ or 3 fathoms, in Beldon cove; but this harbor, like the two former, affords but little shelter from winds from SE. round by south to SW.

Little Chance Harbor is a convenient place for small vessels to anchor when waiting for the tide, but affords no shelter whatever with the wind between SE. and SW. It is about ½ mile wide between the points of entrance, and about ⅜ mile broad in a northerly direction. The western point of entrance should not be approached on its eastern side nearer than 400 yards, but the eastern point may be rounded at 200 yards distance.

Little Musquash Harbor, in all respects, is similar in character to and adapted to answer the same purpose as Little Chance Harbor. The entrance is about ⅓ mile broad; but a mid-channel position should be maintained, as rocks dry off from either shore a considerable distance for which no good clearing marks can be given.

Musquash Harbor, situated 2 miles east of Little Musquash Harbor, is nearly a mile broad at the entrance, and about 2 miles deep, though but little of this space is available for vessels of moderate draft.

Musquash Head, on its eastern side, is steep-to and 80 feet high; but Western Head, which attains an elevation of 139 feet, has a small detached rock, with only 3 feet of water, about 100 yards from its northern horn. Within this horn, to the westward about 400 yards, a rocky spur extends in a northeasterly direction for the distance of 300 yards.

This harbor should be carefully avoided by large vessels, excepting as a temporary anchorage, though vessels in charge of a pilot might in case of necessity obtain shelter in the 5-fathom hole, about 2¼ miles up the river.

Split Rock, nearly a mile to the eastward of Musquash Harbor, is 35 feet high.

The Coast.—From Split Rock to Negro Head the coast is bold, with high rocky cliffs covered with wood; and from Negro Head the land to the northward forms a bay, in which there is good anchorage for a small craft or vessels waiting tide. Partridge Island light-house is distant 5¼ miles N. 47° E. from Negro Head; and by steering on that course from a small offing off the head a vessel will pass outside Meogenes Islands, which lie midway between and clear of danger.

Whistling buoy.—A black whistling buoy is moored in about 16 fathoms off Black Point, with Partridge Island light bearing N. 26° W., distant 3¼ miles.

St. John Harbor lies at the head of the bay, into which falls St. John River, the largest in New Brunswick. The bay—upwards of 3 miles deep—lies between Meogenes Island and Mispeck Point, the latter, being distant from the former 5 miles N. 87° E. The harbor is safer, commodious, and always accessible; and in consequence of the great rise and fall of tide, added to the velocity of the stream, its navigation even during the winter months is never impeded by ice.

The **soundings** for several miles to the southward of Partridge Island range from 7 to 15 fathoms, and the bottom being muddy is admirably adapted for anchoring whilst waiting for the tide. On the bar of the main channel, east of Partridge Island, the depth is about 2½ fathoms; but within the harbor off the city there is anchorage in from 7 to 20 fathoms.

A breakwater runs out in an easterly direction from the south end of the city peninsula for the purpose of protecting the harbor from the violence of the sea during the prevalence of southerly gales.

The city of St. John, the most important in—though not the capital of—New Brunswick, contains a population of about 50,000, and is regularly laid out on the rugged and uneven ground of a rocky peninsula projecting into the harbor at the entrance of the river St. John, and from the sea presents an imposing appearance.

On the western side of the entrance stands the town of Carleton included in the municipality; and a little more than a mile above the city are the falls, a narrow channel about 80 yards wide by about 400

in length, where at low water the level of the river water is from 11 to 15 feet above the sea, and, as the ordinary tides flow from 23 to 27 feet, the sea level at high water is from 8 to 12 feet higher than the waters of the river.

Thus there are two falls during every tide, viz, one outward and one inward, and vessels can only pass when the waters of the ocean and the river are on a level, and this occurs only for the space of about 10 minutes during each ebb and flow of the tide; at all other times it is either impassable or extremely dangerous. During great freshets, which generally happen between the beginning of April and the middle of May from the melting of the snow, the falls are absolutely impassable to vessels bound up the river, as the tide does not rise to the river level.

There is sufficient depth of water for large vessels as far as the falls, and beyond them the river St. John is navigable for small vessels as far as Fredericton, the capital of the province. Immense quantities of timber are rafted down from the forests of the interior to the city of St. John, which is also an entrepôt of the agricultural and mineral products of a wide extent of country.

Anchorage.—The best berth for vessels of war in St. John Harbor is on the west side, a little north of Sandy Point; in this part a vessel will be out of the strength of the tides, and will not swing to the flood until the water in the harbor has risen to the level of the water in St. John River, about 3 hours after the commencement of the flood. In this berth the traffic of steam vessels and rafts will be avoided.

Time Signal.—A time ball, painted black, with a gold band, is dropped daily, except on Sundays, at the observatory on the northern tower of the new custom-house, 112 feet above the ground and 123 feet above high water. The ball is hoisted half mast at 0h. 45m. p. m., close up at 0h. 59m. and dropped at 1h. 0m. p. m. according to the mean time kept at St. John.

Fog.—From observations taken from 1865 to 1885 it appears that the fog signal at the entrance to St. John Harbor was sounded during a total average annual period of 180 hours in July and the same time in August; during 144 hours in June and 96 hours in September. In the winter months, from October to April, the average time the signal was in operation was about 70 hours for each month, including the time sounded during falling snow.

Ice.—The navigation of St. John Harbor has never been known to be impeded by ice, nor does field ice drift into the entrance of the harbor from the Bay of Fundy.

Coal.—About 8,000 tons are usually kept in stock. Vessels are coaled slowly by lighters, but without interruption from weather.

Railway and Telegraph.—St. John is connected with Halifax and Quebec by the Intercolonial Railway; with Fredericton, New Brunswick, and the United States by other lines; a railway is also in course of construction which will give a shorter route to Quebec than the Inter-

colonial Railway. St. John is connected by telegraph with all parts of Canada and the United States.

Steam Communication.—St. John has constant steam communication with the United States.

The United States is represented by a consul and vice-consul.

Partridge Island.—Partridge Island is about ¼ mile in length and 80 feet high; it is distant ½ mile from Negro Point on the mainland, there being as little as 4 feet in mid-channel between.

Should the bell buoy off the NE. end of Partridge Island be gone, Wesley chapel, in line with the middle of the stone barracks, bearing N. 12° W., clears the foul ground off Partridge Island.

Charges.—Harbor dues for vessels of 500 tons, and upwards $3.50, and 25 cents for every 50 tons such vessel may measure over that. Pilotage, inward, varies between $1.25 and $2.80 per foot; outward, $1.60 to $2.50, according to distance. Anchorage dues, from 50 to 100 tons $1, and 25 cents for each 50 tons additional. Health fees, 2 cents per ton. Ballast, discharging, per ton, 40 cents. Ballast, free on board, per ton, 80 to 90 cents. Cost of water, 1 cent per gallon; cost of vessel stores are regulated by the market at New York. Towage for vessel of 250 tons $15; $5 for each 100 tons or part of same additional.

Shag Rocks, which dry at low water, are ⅓ mile in extent, and their outer end lies about ⅘ mile from the shore between Sheldon and Negro Points; near their outer end a small rock dries 6 feet at low water. These rocks can scarcely be described as dangerous, inasmuch as they lie within the line joining Sheldon Point and the north end of Partridge Island.

Tides.—It is high water, full and change, in St. John Harbor at 11h. 2lm.; springs rise 27 feet, neaps 23 feet.

The great volume of water which runs through St. John Harbor during the freshets from the melting of the ice and snow in April and May causes a continued superficial ebb, the velocity of which varies from 2½ to 5 knots; underneath this outset—sometimes 5 fathoms deep—the tides ebb and flow regularly. Abreast the city the tidal stream runs in an hour after the time of high water by the shore, in consequence of the difference of level already alluded to; here also as a rule the flood is weak, but the ebb runs rapidly down past Meogenes Island.

Directions.—Unless in case of necessity strangers should never attempt to enter St. John Harbor without the assistance of a pilot, for the narrow and intricate channel is bordered with sharp rocks, and numerous accidents have occurred to vessels attempting the navigation without local knowledge.

To enter the harbor on the east side of Partridge Island, steer so as to pass close to the eastward of the bell buoy off that island in order to clear the ledges, and when Carleton Church comes in line with Cliff end steer for them until Stone Church, with a conspicuous square tower, comes in line with the end of the breakwater, bearing N. 15° W.,

and with these marks pass east of the red buoy off Negro Point and proceeds on until past the Beacon light-house, steer up the middle of the harbor, and anchor off the wharfs of the city or in the anchorage recommended for men-of-war.

Should the ebb have commenced it would be improper to attempt to gain the harbor until the next half flood; under such circumstances the vessel should remain outside and not attempt to anchor in the channel, where the ebb tide—especially during the freshets in the spring of the year—is so exceedingly rapid as to prevent any anchors holding.

Large vessels should not attempt to leave the harbor later than 1½ hours after high water, as it is the latest time that there would be sufficient water on the bar.

Pilots are always on the lookout, and are sometimes fallen in with in the vicinity of Machias Seal Island; during a fog by firing a gun occasionally they will generally find the ship.

It is very desirable that vessels should take a pilot before entering St. John Bay, for instance at Point Lepreau, if not farther down, for during thick weather the rapid tides—particularly during the freshets—render the navigation of the bay unsafe to a stranger. Steam tugs are always available off the harbor's mouth, and occasionally off Point Lepreau.

Cape Spencer, a bold headland, from 400 to 600 feet high, with steep rocky cliffs, is thickly wooded, and lies about 3 miles from Mispeck Point, with a bay between, which only affords shelter with northerly winds.

In the bay, however, there are several creeks, the largest of which, Ball Creek, about 150 yards broad, enables small vessels to ascend during the flood and lie aground in safety along the inner side of a small pier. On nearing the entrance of the creek bring the end of the pier about midway between the two shores, in order to avoid a rocky spur which runs off nearly 200 yards from the eastern point.

Black Rock.—Of small size and 10 feet high, lies about ½ mile from Conley Head, a point in the middle of the bay just described; the rock is steep-to all round, without off-lying dangers.

The Coast.—From Cape Spencer to Cape Enragé, on the north side of Chignecto Channel, the land is bold and thickly wooded, varying in height from 400 to 900 feet, and divided into hills by numerous valleys through which small streams find their way to the Bay of Fundy.

The mouths of these streams are very similar in appearance, being composed of a bar of shingle and gravel across the entrance, leaving a narrow passage at one side through which small vessels may enter at high water, and lay on the mud at low water, generally safe from all winds. Here vessels load with timber sawn by mills near the entrance, from logs brought down the streams.

The shore between Cape Spencer and Black River is steep-to, excepting in the immediate vicinity of a point about 3½ miles to the west-

ward of Black River, where rocks dry off 200 yards from the shore. There are also some rocks extending 400 yards S. 58° W. from the point next east of Black River.

McCoy Head, about 8 miles to the eastward of Cape Spencer, is a rounded point about 200 feet high, and thickly wooded; the coast between the two points forms a considerable indentation, at the head of which is Black River, which dries across its entrance, but is accessible at certain times of tide for small vessels, though it is said to be unsafe at high water during heavy southwest gales.

Sisters consist of a small cluster of rocks about ⅛ mile from the shore near Entmerson Creek, and about 2½ miles to the westward of McCoy Head. The outer rocks of the cluster uncover at 2 hours ebb, but the inner rock, about 200 yards further in shore, only shows at low water. There is deep water between these rocks and the shore.

Red Head is composed of red cliffs about 50 feet high. Just within McCoy Head to the eastward, good temporary anchorage may be obtained from northerly and westerly winds, in 5 or 6 fathoms, with Rogers and Red Heads just in line. The entrance of Tynemouth Creek lies about a mile to the eastward of Red Head.

Rogers Head is about 400 feet high, thickly wooded and steep-to, with high perpendicular cliffs on its western side, and a steep slope to the southward.

Quaco Head, 250 feet high, is about 2 miles to the eastward of Rogers Head, being separated therefrom by a valley clear of trees, and by a sharp trend of the land to the northward which forms the western side of Quaco Bay.

Bell buoy.—A bell buoy, painted black, is moored in 14 fathoms, southeastward of the shoal ground off Quaco Head, with Quaco Head light-house bearing N. 42° W., distant about ½ mile. This buoy is removed during the winter months.

Quaco Shoal, on which there is as little as 9 feet water, is about a mile in length NNE. and SSW., and occupies a considerable portion of Quaco Bay. A can buoy marks the southern end of the shoal. It is removed and, if possible, replaced by a spar buoy during winter.

Tides.—It is high water, full and change, in Quaco Bay at 11h. 35 m.; springs rise 30 feet, neaps 25 feet. With the exception of the first hour of flood, the tide, both flood and ebb, sweeps round Quaco Bay, from the eastward, inside Quaco Shoal.

Anchorage.—Vessels wishing to obtain temporary anchorage under Quaco Head should—on approaching the light-house from the westward—keep McCoy Head open of Rogers Head until the Roman Catholic church tower of Quaco is seen open eastward of the northern cliff of Quaco Head, in order to clear the outer end of the ledge.

There are no good leading marks into the anchorage, which is in 5 or 6 fathoms, mud, with the light-house bearing S. 2° W. distant about ½ mile. The anchorage is unsafe with winds from NE.—round by east—

to south. Along Quaco Head many vessels are built as well as in some of the creeks along shore. These and timber are the only exports from this part of the coast.

Quaco Ledge is a most dangerous ridge of rugged rocks about ¼ mile in length, with deep water close to around; the highest part uncovers half hour after half ebb, and dries 13 feet at low water, and shows a heavy tide rip when covered. This danger lies 8¾ miles S. 57° E. from Quaco light-house, and S. 87° W., 14¾ miles from the western end of Isle Haute. The tidal current runs about 2 knots in the vicinity of this danger. A red b'l l is moored in 10 fathoms about 200 yards NW. of the ledge.

Found Head.—From McCumber Point, on the north shore of Quaco Bay, the shore between it and Found Head is clear of danger. Found Head is distinguished by its perpendicular red cliffs, from 300 to 400 feet high.

Tuft Point, also known as Long Beach, lies about 5 miles to the eastward of Found Head, and is formed by an earthy bank from 30 to 50 feet high partially cleared. About 1¾ miles westward of the point is Salmon River, and between the two, the 5-fathom line extends upwards of ¾ mile off shore, whilst the low-water line of the beach, just west of Tuft point, extends nearly ½ mile off.

St. Martin Head, about 8¼ miles to the eastward of Tuft Point, is a small bare hillock 100 feet high, connected with the main shore by a narrow causeway of gravel and sand ½ mile long. When seen from a distance the head makes like an island; it may be approached within ¼ mile, save on its western side, where there is a small patch of rocks—which dry 5 feet at low water—¼ mile off shore, S. 53° W. To the westward of St. Martin Head, as far as Wolf Creek, and to the eastward as far as Goose Creek, the 5-fathom line extends ⅜ mile from the shore.

Matthews Head is a bold rounded point 150 feet high, at the distance of 10½ miles to the eastward of St. Martin Head. Matthews head is partially cleared, but within it the land rises to an elevation of 700 feet, and is thickly wooded. Between the two heads there are no less than five creeks, but no off-lying dangers, and the shores may be approached to ¼ mile.

Salisbury Bay.—Between Matthews Head and Cape Enragé, the land recedes and forms Salisbury Bay, 3 miles in depth; one of the salient points of the coast line of the bay is Owls Head, which is 700 feet high, and thickly wooded. Midway between Owls Head and Cape Enragé is Red Head, composed of earthy cliffs from 50 to 100 feet high.

Salisbury Shoal, about 1¾ miles in length between the 5-fathom lines, lies ⅜ mile within the line between Matthews Head and Cape Enragé, with 3½ fathoms on its shoalest part near the center, and can not therefore be deemed a danger to vessels of moderate draught. Within it there is a channel a mile wide, having from 5 to 7 fathoms. The

3½-fathom patch lies S. 87° W., 3¾ miles from Cape Enragé light-house.

Anchorage.—During the summer months vessels may anchor along the whole length of the coast from Cape Spencer at a moderate distance from the shore, the best place for shelter from the prevailing westerly winds being Quaco Bay.

Salisbury Bay is unsafe, in consequence of the frequency of westerly and southwesterly winds to which the bay is exposed, and of the sudden shifting of the wind to these quarters. The tidal stream generally sets towards Cape Enragé light-house.

Cape Enrage is composed of perpendicular rocky cliffs about 100 feet high, and thickly wooded, excepting in the immediate vicinity of the light-house, which stands close to the extremity of the cape.

From Cape Enragé a rocky spur, which dries at low water, extends in a southwesterly direction ¼ mile.

Chignecto Channel divides the shores of New Brunswick and Nova Scotia at the head of the Bay of Fundy, and leads into Cumberland Basin and the river Petit Coudiac; it is free from off-lying dangers, and even in thick weather the gradual decrease of soundings on either side is sufficiently well defined to insure safe navigation.

Abreast Grindstone Island Cape Maringouin divides the water into two branches, the northern of the two running in that direction towards the months of Petit Coudiac and Memramcook rivers, and the other flowing into Cumberland Basin.

The land on the New Brunswick shore is moderately high, thickly wooded, and intersected by numerous valleys; the south shore is not so elevated, and the thick woods which generally prevail are interspersed with cranberry barrens which abound with deer.

Horton Flats.—The shores on either side of Chignecto Channel may be safely approached to ½ mile, excepting in the vicinity of Horton flats, about 7 miles to the northeastward of Cape Enragé. Between this position and Cape St. Mary, flats extend in a straight line a considerable distance off the high line, which here forms a bay.

Grindstone Island.—Grindstone Island, nearly ½ mile in length, lies on the northeast side of Chignecto Channel, and about a mile eastward of Cape St. Mary, the southern point of entrance to Shepody River.

Grindstone Shoal, with 10 feet of water, is the shallowest part of a narrow bank of sand and mud, nearly 4 miles in length. The shoal spot lies $\frac{6}{10}$ mile S. 6° E. from Grindstone light-house, with a passage between; the high line of the south side of Grindstone Island may be approached to 200 yards.

St. Mary Ledge extends off Cape St. Mary ¾ mile N. 42° E.; its highest point covers at four hours flood, and when uncovered may be approached to 200 yards on its SE. side.

Shepody River.—This river falls into Chignecto Channel immediately to the northward of Cape St. Mary, between which and Stiles landing, on the northern side, the distance is 2½ miles; but the river is

not accessible except at certain times of tide, and not even then except by experienced local pilots.

The Coast.—From Cape Chignecto to Squally Point the shore is steep-to and without detached dangers; but from thence as far as Apple Head light-house the shore should not be neared within ½ mile.

Spicer Cove is a slight and shallow indentation immediately within Squally Point, but is only adapted for temporary anchorage for small vessels.

Apple River, 2 miles farther on, dries a little within its points of entrance, which are ¾ mile apart.

Although several indentations occur along this line of coast, none are available for vessels save at certain times of tide. At the South Joggins there are several seams of coal, but the quality is inferior and not adapted for either steaming or domestic purposes. There are also some grindstone quarries along this coast, as well as on the Grindstone Island; and at Cape St. Mary good building stone is to be obtained.

The anchorage off the coal wharf at South Joggins is bad and unsafe with westerly winds, especially during the ebb.

Tides.—It is high water, full and change, at Spicer Cove at 11h. 35m; springs rise 37 feet, neaps 30½ feet. At Grindstone Island at 11h. 47m.; springs rise 41 feet, neaps 34½ feet.

From Cape Spencer the flood tides set to the eastward, generally parallel to the shore as far as Grindstone Island, at the average rate of about 2 knots, the ebb running in a contrary direction to the westward; several eddies are formed behind the salient points of this coast. In the vicinity of Cape Spencer the tidal stream changes its direction about 2 hours before high and low water by the shore; but farther east, off Quaco Head, this difference is reduced to three-fourths hour. Off shore the stream continues to run from one-fourth to three-fourths hour after the time of high and low water.

Off Cape Spencer a rip, which is very heavy with westerly winds, is formed on the ebb; it is caused by a strong eddy sweeping round to the bay to the westward of the cape, and impinging on the ebb tide at right angles. A similar rip occurs off Quaco Head, occasioned by the tide sweeping round the bay to the southward, and meeting the main streams of flood and ebb off the light-house. Off Grindstone Island the tidal current runs from 2 to 4 knots an hour.

Cape Maringouin is the southern termination of a promontory dividing the northeastern arm of the Bay of Fundy into two branches, viz, the river Petit Coudiac to the north and Cumberland Basin to the east. The cape attains an elevation of 220 feet, and from it an extensive bank, formed by the débris of the two branches, extends in a southwesterly direction; the 3-fathom line being 1½ miles from the cape.

Maringouin Shoal is a sandy knoll with only a foot of water, and lies near the eastern edge of the above bank, about a mile from the shore of the cape. From it the east and west tangents of Cape Marin-

gouin bear N. 53° E. and N. 39° W., respectively, and Grindstone Island light-house N. 76° W. 4 miles.

River Petit Coudiac.—Abreast Folly Point the Coudiac is about a mile across, and from thence it trends in a general westerly direction for a distance of 15 miles, to abreast the town of Moncton, after which it takes a sudden bend to the westward, and so continues for a distance of 12 miles as far as the town of Salisbury. The eastern shore of this river is moderately high and well wooded, and between the northern point of Shepody River and Cape Demoiselle on the western shore, a narrow strip of marshy ground fringes the high land, which arises abruptly to the well-wooded Shepody Hills, the highest of which attains an elevation of 1,050 feet.

Maringouin Flats on the north side of Cape Maringouin are covered at ordinary low water; the outer flat is about ⅔ mile long, nearly parallel to the shore, and from it the outer edge is distant about ¾ mile; the water shoals gradually off it, and the danger may be avoided by careful attention to the lead.

Grande Anse Ledge.—The western end of this ledge is rather more than a mile from the eastern shore at the distance of 4 miles from Cape Maringouin. The ledge covers at half-flood, after which it becomes dangerous; the eastern tangent of Folly Point open westward of Coles Head, and bearing N. 9° W., clears the ledge on its western side.

Middle Ground.—This danger dries for about 2½ miles in a north direction, its greatest breadth being about ¼ mile; its highest point near the center being about 6 feet above low-water springs. The southern end lies 4½ miles N. 33° E. from Grindstone Island, and its northern edge bears from Cape Demoiselle N. 50° E., rather more than a mile. The houses on Dorchester Island shut in by Coles Head, the latter bearing N. 6° E., clears the Middle Ground on its eastern side; by careful attention to the lead this bank can always be avoided.

Calhoun Flats dries for nearly ⅔ mile from the high line with 4 fathoms at 200 yards off its outer edge.

Memramcock Spit consists of long, rocky ledges extending off Coles Head, and must be carefully avoided; on the outer end the highest part of the spit, which uncovers during the last quarter ebb, lies ¼ mile from the Coles Head shore and 1⅛ miles S. 25° E. from Folly Point.

The church on the eastern shore of Petit Coudiac above Folly Point, open westward of Folly Point and bearing N. 34° W., clears this danger on its western side.

Tides.—It is high water, full and change, at Folly Point at 11h. 49m.; springs rise 45 feet, neaps 38 feet. In the vicinity of the point the tide stream runs from 3 to 4 knots an hour.

Directions.—When off Cape Spencer and bound to the eastward, keep close to the cape if on the ebb, and avoid the tide rip already described, by passing either inside or outside. If bound through Chignecto Channel care must be taken not to pass within ½ mile of the

light-house on Cape Enragé when on a N. 25° E. bearing, in order to avoid the rocky ledge which extends off in a SSW. direction.

In making either for Chignecto Channel or Cape Chignecto care must be taken to make full allowance for the effect of the tides, which will considerably modify the courses obtained from the chart.

Anchorages.—Temporary anchorage may be obtained in moderate weather along the whole extent of coast between Capes Spencer and St. Mary, but when the winds—to which the coast is exposed—blow with any force the anchorage is bad, especially in localities where the strength of tide is great.

There is an anchorage to the north and west of Grindstone Island, between it and the mouth of Shepody River, but it is somewhat difficult of approach by a stranger; to enter it from a safe offing off Cape Enragé, steer to bring Grindstone Light-house to bear N. 39° E., until about a mile distant, when haul a little to the northward, taking care not to shut in Cape Enragé Light-house with Cape St. Mary, nor approach Grindstone Island nearer than 800 yards. When Grindstone Light-house bears S. 48° E., St. Mary Ledge will have been passed, and the vessel may be hauled up for the Shepody Mountain; anchor clear of the shoal ground north of the light-house, with the latter bearing about S 20° E., and Cape St. Mary S. 36° W.; here there will be 4 fathoms, but the holding ground is not good.

Another anchorage to the northeast of Grindstone Island which is frequently used is in about 3 fathoms mud, about ½ mile N. 36° E. from the eastern point of the island.

Vessels in moderate weather may anchor anywhere off the mouth of the river Petit Coudiac below Folly Point according to their draft of water, but the best anchorage is between Folly Point and Stone Wharf, which is as high as vessels of any size can lay afloat at low water. Here, in about 3 fathoms mud, vessels may anchor with Folly Point bearing N. 64° E., and Indian Church N. 21° W.; but as the tide current runs from 3 to 4 knots, there is a disagreeable sea when the wind is against the stream, and if intending to stop longer than a tide, it is necessary to moor in order to avoid fouling the anchor.

Pilots.—If intending to proceed farther up the river the services of a competent pilot must be obtained, as the direction of the narrow shallow channel is frequently changed. Though there are no regular pilots, men can be procured from Hillsborough who are acquainted with the river.

River Memramcook.—The western shore is of a moderate elevation and covered with trees, whilst its eastern shore is partially cleared.

There is a small hole with 9 feet water to the SW. of Dorchester Island, but even small vessels should be moored, if it be intended to remain afloat.

Cumberland Basin lies on the eastern side of Cape Maringouin, between which and Boss Point the entrance is 1½ miles across; from this

position the channel is straight and navigable for a distance of 8 miles to a little beyond Woody Point, on the northern shore, where anchorage may be obtained in the narrow channel in 4 fathoms about ¼ mile off the northern shore. This is known as Sackville Anchorage, where vessels should moor, and their position be selected by means of the lead.

Anchorage.—There is also another anchorage eastward of Peck's Point, on the north shore of the entrance, in about 5 fathoms mud, with the SE. extreme of Cape Maringouin open of Peck's Point, bearing S. 33° W., and the end of the wharf in Peck's Cove S. 78° W.

Vessels may anchor anywhere between the above places, excepting during strong westerly winds, which frequently occur, when the ebb stream, which attains a velocity of 4 or 5 knots an hour, causes a very disagreeable sea. It is advisable to moor at any of the anchorages, especially with southwesterly winds and an ebb stream. Above Sackville Anchorage only small vessels can lie afloat at low water, but trading craft lie aground on the mud.

In Cumberland Basin there is a profitable shad fishery, which commences in June. The exports are coal from the South Joggins and river Hebert, as well as some agricultural produce, and a few small vessels are built.

Tides.—It is high water, full and change, in Cumberland Basin at 11h. 55m.; springs rise 45¼ feet, neaps 38 feet. The rise and fall being so great, the velocity of the tide is very great.

Directions.—In running for Cumberland Basin care must be taken on approaching the entrance to open Minudie Point to the southward of the east tangent of Cape Maringouin, bearing N. 47° E., in order to clear Maringouin Shoal, after passing which a course should be steered to pass the east extremity of Cape Maringouin and Peck's Point not less than ⅛ mile, to which distance both can safely be approached.

If intending to proceed beyond Pecks Anchorage, keep the east tangent of Cape Maringouin open of Pecks Point, bearing S. 44° W., and with these marks astern a vessel will be kept in the deep-water channel to abreast of Minudie Point, after which a more northerly course should be steered, in order to avoid the mud bank, which dries at low water and extends to a considerable distance from the southern shore.

Amherst, in the NE. part of Cumberland Basin, is the southern terminus of the ship railroad running through to Bay Verte, which is now nearly completed. The distance, about 17 miles, will be traversed at the rate of 10 miles an hour, the maximum weight carried to be about 2,000 tons. The receiving docks at each end are about the same size, 500 feet long, 300 feet wide, and will hold from 6 to 10 vessels. The lifting docks, which communicate with the receiving docks, are 250 feet long and 60 feet wide.

CHAPTER III.

BAY OF FUNDY—SOUTH SHORE—BARRINGTON BAY TO BASIN OF MINES.

Barrington Bay has for its points of entrance Baccaro Point on the east and Cape Sable on the west. Near its head is an anchorage accessible by two channels, viz, east and west of Sable Island. The western channel must be considered impracticable to a stranger, in consequence of extensive flats and numerous dangers, which narrow the channel and render the navigation always difficult and most frequently dangerous.

Barrington.—At the head of the inlet, and extending a considerable distance along the shore, is the straggling township of Barrington, which exports fish; but few supplies of any other kind can be procured.

Directions.—By referring to the chart the position of the various shoals in Barrington Bay will be seen, and the seaman must depend on his intelligence to avoid dangers, which it would be useless to describe in the absence of good landmarks.

Approaching from the southward and being a mile west of Bantam Rocks (marked by a bell buoy); a N. 22° W. course will lead up the bay to a mid-channel position abreast Clam Point, from whence Lighthouse Rock should be seen, and by steering for it on a N. 48° W. bearing anchorage will be found in about 6 fathoms, with the NE. point of Cape Sable Island bearing S. 77° W.

On approaching the anchorage care must be taken to avoid the extensive sand flats which surround Beach Point. The best course to pursue when steering for Lighthouse Rock will be to borrow slightly on the island shore, towards which the water shoals gradually, and keep in about 5 fathoms, so that by porting the helm the water will deepen. A heavy sea sets into Barrington Bay when blowing hard from between south and SE., and renders the anchorage unsafe.

There is room for a vessel to turn into this anchorage by the eastern passage, and by paying careful attention it may be done without a pilot.

Cape Sable Island, about 7 miles in length and of an irregular form, is only separated from the mainland by ⅓ mile. The island is thickly wooded, singularly flat, and surrounded by dangers, especially on its south and western sides.

Cape Sable, at the south end of the island, is also the southwestern extremity of the province of Nova Scotia, and is the outer end of a small

island whose hillocks of blown sand, varying from 15 to 28 feet high, are continually shifted by hard gales.

Columbia Rock is a small pinnacle with 7 feet water; it was discovered by Her Majesty's surveying vessel *Columbia* touching on it, and lies S. 37° E. one mile from Cape Sable light-house. Beyond this rock, in a southerly direction for a distance of ⅔ mile are the continuations of the rocky ledges which extend from Cape Sable; over these are heavy tide rips during the strength of the tides, caused by the stream rushing over the uneven rocky bottom.

Horse Race, a rocky patch with 2 fathoms water, lies ¼ mile within Columbia Rock, and causes a heavy tide rip.

Southwest Ledge, so named from its relative position to Cape Sable, is about ½ mile in length. Near the northern end are two rocks which generally uncover at low water, and ¼ mile further out is a rock on which the sea generally breaks; this rock nearly uncovers at low-water springs.

From the latter Cape Sable light-house bears N. 55° E. 1¾ miles, and beyond it for the distance of nearly a mile in a seaward direction heavy tide rips rush over the rocky tail of the ledge, though with 6 and 7 fathoms water on it.

Tides.—Strong northwesterly winds lower the surface of the water, and southeasterly winds have a contrary effect, though the times of high and low water are not materially affected by either.

At Brazil Rock the stream turns about half an hour before high and low water at Cape Sable, towards which the flood stream runs about 2 knots an hour; but seaward of Brazil Rock the rate diminishes in proportion as the distance from the shore increases, whilst over the rock the tides rush with great rapidity and create a considerable rip.

Inshore around Baccaro Point and over Bantam Rocks the flood sets strong, and, from the point, trends towards Stony Island (on the east shore of Cape Sable Island), where the stream divides, the northern branch setting round Clam and NE. Points, and thence to the southward along shore towards Cape Sable, whilst the southern branch trends along the eastern shore of Cape Sable Island towards the same point.

Outside Bantam Rocks the flood sets towards Cape Sable, round which, for a distance of 3 miles off shore, it attains a velocity of fully 4 knots during its strength. After rounding the cape the flood stream sets towards Seal Island, passing it and through the various channels to the northward between it and Tusket Island, in a general NW. direction, at rates varying from about 2¼ to 4 knots an hour. The flood assumes a more northerly trend along the main shore. The direction of the ebb stream is nearly opposite to that of the flood, and runs with equal velocity.

Seal Island, about 17 miles west of Cape Sable, is about 2¼ miles in length, low, thickly wooded, and is the most off-lying in a southerly direction of a cluster of islands extending from Frenchman Point. The

island is surrounded on its east, south, and west sides by shoals of a very dangerous description, and when navigating in their vicinity great prudence is required.

Purdy Rock is of small extent, with 2¼ fathoms on it and deep water all round, but it shows a rip during the strength of the tide, and breaks in heavy weather. From it Seal Island lighthouse bears N. 78° W. 2¼ miles.

Blonde Rock is about ¼ mile in length, and a small portion near the middle uncovers about 2 feet at low water springs; this part lies with Seal Island light house bearing N. 22° W. 3½ miles.

Tide Rip.—About a mile westward of Blonde Rock is a heavy breaking rip during the strength of the tidal stream, but a sufficient depth of water was found through it.

Elbow Shoal, about a mile in length, has on its shoalest part only 5 feet water on it, from which Seal Island lighthouse bears N. 6° W. 1⅛ miles, and the eastern tangent of Seal Island is just in line with the rock on its south point.

Zetland Shoal was reported to have only 17 feet over it, but on examination nothing less than 21 feet was found. It breaks in heavy weather, and is marked by a rip during the strength of the tide; from Seal Island light-house it bears S. 25° W., upwards of 1¾ miles.

Devil's Limb is a small rocky islet about 10 feet above high water springs, distant 1¼ miles from Seal Island light-house in a N. 69° W. direction. About ¼ mile south of the islet is a rocky shoal which uncovers at low-water springs, and named Loch Foyne.

Limbs Limb, upwards of a mile northward of Devil's Limb, shows one hour after high water, and is steep-to on its western side.

There is a passage inside the Limb shoals for vessels of moderate draft, but it should only be attempted by those well acquainted.

Anchorage.—There are temporary anchorages on both sides of Seal Island, but as the bottom is rocky, tides strong and irregular, anchors are liable to foul; these anchorages should never be used unless the wind be off the island.

Mud Islands are situated 2½ miles northward of Seal Island, and consist of four small islands, named Noddy, Mud, Round, and Flat; of these, Mud and Round Islands may be approached within a moderate distance on their eastern side, but Noddy Island should not be approached within ½ mile.

From the northern end of Flat Island a shoal extends off ⅛ mile, terminating in a rock with only 7 feet water, over which the tide causes a considerable rip. Between Seal and Noddy Islands there is a safe deep-water channel, but one-third of the way across from Noddy Island is a shoal reported to have 18 feet water, but on examination nothing less than 5¼ fathoms could be found.

The flood stream sets strong through this channel at a rate of nearly 4 knots in a NW. direction, the ebb running to the SE. attains the

same velocity. When using the channel in thick weather it is better to borrow on Seal Island shore, but as a rule—during fogs—it is advisable to pass southward of Blonde Rock. If from the southward, with Blonde Rock in sight, Flat Island seen just open east of Seal Island will lead between Blonde Rock and Elbow Shoal.

Anchorages.—Temporary anchorage may be obtained on the east side of Mud Island in about 8 fathoms, with the east end of Mud Island in line with the middle of Round Island, and the SE. end of Mud Island in line with the middle of Noddy Island.

A vessel may also anchor on the NW. side of Flat Island, but it must be distinctly understood that the anchorages around these islands are not recommended, and should only be resorted to as a matter of convenience in fine weather, or when driven by necessity during bad weather.

Black Ledge, nearly a mile west of Mud Island, is always visible, except at high-water springs, when its position is marked by a breaker.

Mud Island Shoal, which is ¼ mile in length, should be avoided by vessels of large draft, because the bottom being irregular it is probable the least water has not been obtained. From the depth of 4 fathoms on the eastern end of the shoal Seal Island lighthouse is seen just open west of Division Point bearing S. 15° E. 5 miles; and the south end of Mud Island S. 89° E., a little over 2 miles.

In steering between Noddy and Seal Islands a vessel should pass southward of this shoal.

Soldier Ledge is a dangerous patch of rocks about 2¼ miles N. 56° W. of the north point of Flat Island; the passage between, though available, is not recommended, as it is possible shoals may exist in the parts only partially examined. A portion of the ledge, about ¼ mile long, uncovers about 2 hours after high water and is very dangerous, but it generally breaks when covered.

The SE. extreme of Frenchman Island seen open north of Bald Tusket Island bearing N. 23° E. leads westward of Soldier Ledge.

Stoddart Cove lies just within the north point of Stoddart Island, which is 2½ miles from the west head of Cape Sable Island; the cove in which there is not less than 14 feet water affords good anchorage in all weather for small vessels. In entering keep on the Stoddart Island shore, in order to avoid a rock awash at low water springs about 350 yards off the west point of Prospect Island.

Shag Harbor, between Bon Portage Island and the main, is adapted for vessels of any draft, and though open to the southward, is said to be sheltered from any heavy sea by the ledges off Cape Sable. In 1865 her majesty's ships *Sphinx* and *Gannet* used an anchorage west of Prospect Island in about 8 fathoms, with the western tangents of Green and Stoddart Islands in line, and the Baptist church of Shag Harbor village in line with the north end of Prospect Island bearing NE. This position is to the eastward—and beyond the influence—of the strength

of the tidal streams, and the holding ground is more tenacious than nearer the shore, but not being good, a long scope of cable should be given; the best holding ground is said to be above Conquer All. Southerly winds, though blowing hard at Cape Sable and Seal Island, did not blow home in September and October, 1865, though a ground swell was experienced at the anchorage.

When making the harbor from the southward or westward in tolerably clear weather the entrance is easily distinguished, as Bon Portage Island makes out well, the white beach on the south point being conspicuous under the dark trees. In entering with the flood a wide berth should be given to the south point of the island, as the tide sets directly for it at the rate of 4 miles an hour.

Cockerwit Passage.—At the entrance of Cockerwit or Wood Harbor and between it and the Mutton Islands, there is a good anchorage in 5 to 5½ fathoms, mud. In the passage to this anchorage there is a rock which uncovers at low springs, having deep water close to. Robinson Ball station (built of stone) in line with the center of Little Stony Island leads on this rock; but a house standing on the northern end of Stoddart Island seen just open eastward of a detached rock off Prospect Point leads eastward. Cockerwit Passage can only be used by vessels drawing 8 to 9 feet water, and steered by experienced persons.

St. John Ledge, a dangerous shoal ¾ mile in extent, has near its center a patch which generally shows except at high water springs. Pubnico Light-house open to the westward of St. John Island bearing N. 17° E. leads westward of the ledge.

A red bell buoy is moored in 21 fathoms about 1½ miles southwestward from St. John Ledge with Pubnico Light-house bearing N. 16° E. distant 6¼ miles.

Directions.—Pubnico Harbor affords safe anchorage to ships of large draft, and from the comparative absence of dangers at the entrance is accessible at all times.

On approaching the harbor with a leading wind, after passing St. John Island, bring the light-house to bear N. 39° E., bearing in mind that shoal water extends off St. Ann Point to the distance of ¼ mile; pass 200 yards from the lighthouse, and steer to pass close on the eastern side of the white spar buoy, marking the outer extremity of a rocky ledge—which uncovers at low water—extending from the western shore a little within Beach Point. After passing the buoy haul a little to the westward, and steer for the church, a conspicuous object on the western shore, in order to clear a shoal on the eastern shore with 11 feet water (but on which it is possible there may be a less depth, as the bottom is sharp and irregular), and when the light-house bears south steer north and anchor in 9 or 10 fathoms, mud, abreast the wharves near Meres house, inclining a little to the western side of the harbor.

Caution.—Vessels bound to Pubnico should be careful to keep well outside St. John Ledge, as the current sets directly over it, sometimes very strong.

Water.—A fresh-water spring, close to the southern wharf, affords about 4 tons of good water daily.

St. Ann Shoal, ¼ mile in length, with 2½ fathoms on it, lies with St. Ann Point, bearing S. 62° E. 1¾ miles, and the southern Twin Island N. 22° E. upwards of 1½ miles.

Nearly abreast St. Ann Shoal is a rocky spit with 2¼ fathoms, extending ½ mile from the main shore. The passage between these dangers is deep and ⅜ mile broad. The Twin Islands in line bearing N. 13° E. leads in mid-channel between the spit and St. Ann Shoal.

Twin Islands, about ½ mile from the shore and the same distance apart, are very small in size, with shoal water around them, leaving only a narrow deep water channel between. Off the northern Twin are two small detached shoals, one with 2½ fathoms bearing N. 74° W. ⅓ mile, and the other with 7 feet water N. 23° W. nearly ½ mile.

Within Twin Islands there is a narrow channel with upwards of 5 fathoms.

Abbott Harbor, with 3¼ fathoms water, is formed by the narrow channel between Abbot Island and the main shore, and though only 200 yards across at its entrance, is well adapted for vessels of small draft, being easy of access and completely sheltered from all winds.

Argyle.—The scattered township of Argyle lies on the main land to the northward of Abbott Island. Off its shores are several anchorages but the channels leading to them are too intricate to be entered without a pilot.

White Head Island, the southeasternmost of the numerous islands in the upper part of the bay between Abbott Harbor and Frenchman Point is situated 5 miles north of St. Ann Point; the island is about ¼ mile in length, and conspicuous by earthy cliffs of a reddish color, nearly 70 feet in height on its southward side.

White Head Ledge, about ¼ mile in length, uncovers near its center at low water, and after half ebb the position of the shoal is marked by kelp. From the part which dries the south end of White Head Island bears S. 76° W. ¾ mile.

West Shoal, about ⅛ mile in length, has only 12 feet water near its southern end, and from it the south end of White Head Island is distant ½ mile S. 62° E.

Jones Ledge, nearly ½ mile in length, dries near its center, from which the south end of Jones Island bears N. 9° W. ⅓ mile.

Gull Island, a low green island situated 2 miles westward of White Head Island, should not be approached on its southern side within ½ mile. From its northern end a long narrow stony bar, which dries at low water, extends ⅜ mile.

Midway between Gull and Eastern Bar Islands is a rocky patch 400 yards long having only 4 feet on its southern end.

Gull Ledge lies 2 miles S. 6° E. of Gull Island and has only 5 feet

on its shoalest part, from which the large barn on Sheep Island is on with the western high-water line of Gull Island.

Southwest Shoal is small, with 2½ fathoms and deep water close to. From this shoal the west end of Gull Island bears N. 68° E. one mile.

Jones Anchorage.—In case of emergency Jones Anchorage may be rendered available by proceeding as follows, viz: Steer for White Head Island on a N. 5° E. bearing, and keep along its eastern shore, with the center of Lear Island, 60 feet high, bearing N. 3° W.; this course will lead between White Head Island and ledge, and also nearly in mid-channel between Pumpkin Island and Pumpkin Ledge; the latter has only 2 feet on it, but is marked at half tide by kelp.

When abreast the north end of Pumpkin Island, or with the west ends of Thrum and Hog Islands in line bearing N. 23° W., alter course for the east tangent of Jones Island, and steer along its east shore about 300 yards off, where good anchorage will be found in about 6 fathoms, mud, with the center of Ram Island in line with the south end of Lear Island.

To pass west of White Head Island, bring the east end of Thrum Island in line with the west end of Pumpkin Island bearing N. 11° E., this mark will lead midway between White Head Island and West Shoal. After passing along the west of Pumpkin Island steer for the channel between Thrum and Jones islands, and proceed as before directed.

Big Fish Rocks consist of a small cluster of rocks, which uncover at low water, about ¼ mile NW. of Big Fish Island, with 3½ fathoms in the channel between. From these rocks the SW. tangents of Big Fish and Eastern Bar islands are in line, and the large barn on Big Sheep Island open of north tangent of Big Fish Island.

Tusket River—Eastern Channel.—Tusket River should not be attempted at low water by vessels over 15 feet draft; it affords safe anchorage, but the two approaches, being narrow and beset with dangers, require great caution when entering.

If from the southward, Gull Ledge may be cleared by bringing the large barn on Sheep Island well open of the west end of Gull Island, or just open to the east end of Gull Island. After passing the ledge keep to the NE. until Big Fish Island light-house is in line with the north end of Eastern Bar Island, bearing N. 47° W., and by steering this course the shoal water off Gull Island and the half-tide rock off Sheep Island will be avoided. On nearing Eastern Bar Island, when the east end of Sheep Island bears N. 19° W., keep carefully on this course and steer through the narrows between Wilson Point and Eastern Bar Island as far as the south point of Tucker Island, when alter course to bring Wilson Point astern, bearing S. 32° E., and anchor in about 6 fathoms, mud, off the west end of Sheep Island.

Western Channel.—After passing Gull Ledge, open Tucker Island

west of Inner Fish Island, bearing north, which is a good mark for clearing the SW. shoal, and after passing it keep to the NW. until Big Fish Island light-house bears N. 5° E., when continue on that course until the south end of Eastern Bar and White Head Islands are in line; then steer N. 38° W. for a short distance until the east end of Mike Island is apparently just touching the west end of Tucker Island, bearing N. 12° E.; steer with these marks on, passing 200 yards west of Big Fish Island, until little Fish Island apparently just touches Big Fish Island, when by keeping these marks astern a vessel will clear Big Fish Rocks on their eastern side, and avoid the shoal ground north of Big Fish Island.

When Inner Fish Island is seen open east of Big Fish Island, alter course for Pinch Gut Island N. 9° E., which should lead in deep water between Tucker Island and its ledge on the west side of the channel, and when Wilson Point appears to touch the north side of Tucker Island a vessel will be clear of the shoal ground north of Tucker Island, and might steer to the eastward and anchor as before directed off the east end of Sheep Island. Vessels should not proceed beyond this anchorage without local knowledge, as the channel is intricate and tide rapid.

In the narrows abreast Plymouth settlement the stream during the strength of springs runs about 5 knots, and in the vicinity of Pinch Gut Island 2 knots an hour.

Old Woman is the name given to a rock near the center of a shoal about 800 yards long north and south, which uncovers at 2 hours' ebb. Big Fish Island light-house, bearing N. 5° E., leads eastward of this danger, as well as all the shoal patches and ledges, on the western shore of the western entrance to Tusket River.

Old Man is the largest of a small cluster of rocks which uncover about an hour before low-water springs, and from it Bald Tusket Island bears S. 47° W. one mile. Owls Head, seen open east of Allen Island bearing N. 36° W., leads eastward.

Bald Tusket Island is about 400 yards in extent, 50 feet high, and bare of trees; it is the most off-lying and conspicuous of the Tusket Group, but should not be approached on its north, west, and south sides nearer than ⅛ mile, in consequence of shoal water.

Little Bald Tusket Shoal, with 9 feet water, lies with the east end of Marks Island apparently touching the south end of Pease Island, bearing N. 12° E., and the north end of Inner Bald Island S. 50° W. about ½ mile.

Harriet Ledge occupies a central position on a rocky shoal ¾ mile in length; the ledge is about 200 yards long, covers at a third flood, and during the run of the tide shows a considerable tide rip.

From the ledge Holmes Island is seen just open north of Spectacle Island, and the south point of Pease Island apparently touching the north point of Little Half Bald Island.

Cleopatra Shoal is a dangerous detached shoal 400 yards in length,

with 12 feet on its shoalest part, which is marked at low-water springs by a few long pieces of kelp. This danger has deep water all round it, and shows a rip during the run of the tide. Half Bald Island seen open east of Bald Tusket Island leads eastward, and open west leads westward, of Cleopatra Shoal.

Shoals.—Between Cleopatra Shoal and Bald Tusket Island there are two small shoals with 2¼ and 3 fathoms, respectively, both being marked by rips during the strength of the tides; there is a deep channel ⅔ mile broad between them and Bald Tusket Island, and a similar deep-water passage between them and Cleopatra Shoal.

Pease Island Ledge, about 200 yards in extent; covers at one-third flood; it is about ¼ mile from the eastern point of Pease Island, with a deep-water channel between. The south point of Spectacle Island open of south point of Pease Island bearing S. 84° W. leads to the southward of the ledge.

Marks Island Ledge uncovers at low-water springs and lies 300 yards off the west side of Marks Island; it shows a considerable rip during the strength of the tide, which runs over it with great velocity.

Allen Rock lies 300 yards off the south end of Allen Island and shows a whirl in the strength of the tide.

Schooner Passage Rock, with 9 feet water, lies nearly midway between Owls Head and Turpentine islands, with a deep-water channel on either side.

Bird Rock, at the outer end of a reef extending from the south end of Owls Head Island, always shows.

Spectacle Ledge, about 400 yards long and very narrow, has 11 feet on it, and is marked by a large rip during the strength of the tide. From the shoalest spot Spectacle Island south end bears N. 5° E. upwards of ⅔ mile.

Tides.—The tide turns a little after high and low water respectively, and runs rapidly through the Tusket Island passages, the tide rips being numerous and heavy. Its general set is to the NW. and SE., but this is modified by the position and shape of the islands, which form considerable eddies, and by the main land, in the vicinity of which the tide follows its direction. The average rate is from 2 to 4 knots, and round some points its rate probably exceeds the latter; off the northeastern point of Ellenwood Island the stream runs 4 knots, and in Schooner Passage 3 knots, per hour.

Directions for Schooner Passage.—To run through Schooner Passage from the eastward keep Owls Head open of Allen Island bearing N. 35° W., which will lead eastward of Old Man and Little Bald Tusket Shoals, and when the barn of Ellenwood Island appears to touch the NE. end of Pease Island alter course immediately to keep these marks on in order to pass westward of Pease Island Ledge, which should be rounded close-to on the flood, as it sets strong towards the south point of Pease Island.

Having passed the narrows, bring Candlebox Island midway between Allen and Haymaker Islands, and steer for it, this course will lead clear of Haymaker Ledge and Allen Rock, and after passing Allen Island keep to the westward until the east end of Murder Island is shut in by Candlebox Island, in order to pass west of Schooner Passage Rock.

Pass Candlebox Island close-to on its west side, and steer out through the narrows of the northern entrance, with the south point of Candlebox Island apparently just touching Turpentine Island, until Owls Head appears just to touch the tangent of Haymaker Island, and with these latter marks on steer out between Murder Island Shoal and the shoal spit extending from the NW. point of Murder Island.

For Ellenwood Passage.—If intending to proceed through Ellenwood Passage, after passing Pease Island Ledge keep the barn on Ellenwood Island just open south of Allen Island bearing N. 57° W. to clear Allen Rock, and after passing it keep in mid-channel between Marks and Allen Islands, altering course to pass between Bird Rock and Ellenwood Island. After passing this rock, bring it in line with the east point of Marks Island, which will lead through the deep-water channel of the sand narrows, continue on until Owls Head and the western tangent of Haymaker Island are apparently just touching, when steer out with these marks on as before directed.

Anchorages.—Good anchorage will be found in Schooner Passage off the north end of Allen Island in 5 to 9 fathoms, mud; and there is also good anchorage to be obtained in Ellenwood Passage off the barn, about 300 yards to the northward of Bird Rock, in about 5 fathoms, gravel and sand. Care should be taken to anchor out of the strength of the tide in Ellenwood Passage on the following bearings: Bird Rock S. 68° E., and barn on Ellenwood Island S. 72° W.

To approach this anchorage from the SW. keep the cliff on the southwestern point of Ellenwood Island open east of Spectacle Island bearing north, in order to clear Spectacle Ledge, taking care not to open out Holmes Island until past Harriet Ledge.

When the south end of Pease Island is in line with the north end of Half Bald Island steer for the south end of Marks Island, and passing it on its eastern side steer through Ellenwood Passage to the anchorage before described.

Gannet Rock, barely 400 yards in length, is a narrow rocky ridge, having near its southern end a peak resembling a sugar loaf, 50 feet high, with a lump on its northern end of almost equal elevation. From the peak Yarmouth light-house bears N. 4° W. nearly 9½ miles, and Seal Island light-house S. 23° E. 15⅝ miles; both will be in sight in clear weather.

North Rock, of very small extent, shows about half tide, and lies ¼ mile N. 12° W. from Gannet Rock.

South Rock, also small and showing at half tide, lies more than ⅜ of a mile from Gannet Rock in a S. 12° E. direction.

Southeast Rock lies nearly 1½ miles S. 31° E. from Gannet Rock, and shows two distinct breaks in heavy weather and a considerable rip during the strength of the tide. It is steep to on its east and west sides, and from it Yarmouth light-house appears just touching the eastern tangent of Green Island.

Gannet South Shoal lies 4⅛ miles in a southerly direction from Gannet Rock, the least water found being 4 fathoms; it shows a tide rip, and breaks in heavy weather. From it the outer high lump of Cape Fourchu is just open of the east tangent of Green Island.

Gannet Southwest Shoal bears from Gannet Rock S. 8° W. 3 miles, and has only 3 fathoms water; it extends ¼ mile north and south, shows a tide rip, and breaks in heavy weather. Green Island, just open west of Gannet Rock, leads over the shoal.

Gannet Dry Ledge uncovers at 2 hours' ebb, and generally breaks at high water; it bears from Gannet Rock peak S. 36° W. 1¾ miles.

Jacko Ridge consists of two rocky patches about 1½ miles in extent, with 27 feet over the shoalest part, which is distant 13 miles S. 5° W. from Jebogue Point.

Green Island, about ⅛ mile long and 50 feet high, is distant 2¾ miles S. 22° W. from Jebogue Point. It would be advisable to give the south point of this island a berth of at least ½ mile.

Caution.—The foregoing shoals and ledges being very uneven, it is highly probable that when examined the least water might not have been discovered.

Reef Island Ledge, off the entrance of Jebogue River, uncovers at quarter ebb, and is shoal all round for a considerable extent; between it and Reef Island there is no safe channel, whilst to the southward shoal water extends to the distance of a mile. From the center of the ledge Jebogue Point bears N. 51° W. one mile, and the south end of Reef Island east, ½ mile.

Reef Shoal, about ¼ mile long, has only 12 feet on its shoalest part, and causes a tide rip; although there is deep water on either side, the shoal had better be passed on its western side.

From the west end of the shoal Yarmouth lighthouse is just shut in with Jebogue Point, and the south end of Reef Island bears N. 56° E. 1¼ miles.

Yarmouth lighthouse, open west of Jebogue Point, bearing N. 22° W., clears this reef close to on its western side, and also leads through the inner channel.

Jebogue Point Shoal is an extensive patch, with 14 feet water about ¼ mile off the pitch of Jebogue Point, with 3½ to 5 fathoms in the channel between.

Jebogue Ledge, about ⅛ mile in extent, has only 2 feet on its shoalest part, from which Jebogue Point is distant one mile N. 37° E.; it is very dangerous, shows a tide rip, and breaks with an ordinary swell. There is a good channel between this danger and Green Island.

Foul Ground, about ½ mile in length, with only 9 feet water, lies with the south end of Reef Island in line with Jebogue Point bearing S. 62° E., the latter point being 1¼ miles distant.

Roaring Bull is a small rock, which uncovers about 3 feet at low-water springs, about a mile from the shore, and in the direct line between Green Island and Yarmouth light-house; from it Jebogue Point bears S. 51° E. 1¾ miles. The rock shows a tide rip, and breaks with an ordinary swell. A red bell buoy is moored 1½ miles S. 50° W. of this rock and serves as a guide to vessels seeking the entrance to Yarmouth.

Jebogue River.—The approaches to Jebogue River are studded with dangers for which—especially in hazy weather—no good clearing marks can be given, and a bar extends across its entrance having in one part only 11 feet water.

There is, however, a safe anchorage inside the entrance of the river, and in cases of necessity it may be used by vessels of moderate draft.

Directions.—A vessel from the SW. and in the vicinity of Green Island should steer a course to pass westward of Reef Shoal, and when the west end of Perry Island appears to touch the sandy spit opposite Fox Island bearing N. 11° E. steer for it on that bearing over the bar, and pass about midway between Fox Island and the spit.

Good anchorage in smooth water, though in a limited space, may be obtained in 16 feet water about 250 yards within the north point of Fox Island, care being taken to keep Gannet rock in sight in the middle of the entrance in order to avoid the mud bank on the western shore and two small mud banks in the middle of the channel at its bend. Good, fresh water can be obtained, the supply being about 3 tons per tide.

Yarmouth Sound is available as an anchorage with all winds, excepting those between south and west, when it is dangerous with strong winds. The best anchorage is about 20 feet, over sandy bottom, with the light-house bearing west, distant about ¼ mile. The shore inside the light-house should not be approached within 200 yards, as several detached rocks lie off it.

Hen and Chickens consist of a cluster of rocks extending about 400 yards from the shore on the eastern side of the sound opposite the lighthouse, from which they bear east. The rocks begin to uncover about two-thirds ebb, and a good mark for clearing them on their western side is the Independent Church spire at Yarmouth in line with the middle of low beach at the head of the sound.

Dangers.—The principal danger outside the beacon at the extremity of Bunker Island Ledge is a rock, with only one foot water, lying 350 yards from Ship's stern; whilst the most important danger inside the beacon, at the distance of 600 yards, is a rock in the middle of the channel, having only 3 feet over it.

Tides.—The tidal stream changes its direction a little after high and low water by the shore respectively. From Ellenwood Island to Yar-

mouth the flood stream runs between the ledges inside Green Island about 3 knots during its strength, with a short interval of slack water. The flood sets strong round Cape Fourchu to the northward, so that a vessel making for Yarmouth Sound should haul up immediately she has cleared Roaring Bull Rock.

Yarmouth Harbor.—The town of Yarmouth is of considerable extent, being upwards of 2 miles in length in a continuous line; it exports a large amount of fish, and supplies can generally be obtained. Fresh water can be procured from wells; that from the lake is not good, and difficult to obtain. It has a population of 5,000.

Charges.—Pilotage, as per agreement, about $2 per hundred tons. Sick mariners fund, 2 cents per ton. Tugboat charges, about 4 cents per ton inward and outward. Discharging ballast, 10 cents per ton. Cost of stone ballast, 10 cents per ton. Loading general cargo, about 30 cents per ton.

The channel leading to the anchorage off the town is well marked by beacons and buoys; and when above Battery Point with red posts on the starboard hand and black on port. The rock near Bunker Island Ledge is marked by a red spar buoy, whilst the danger inside the beacon is marked by a black buoy.

The anchorage within Bunker Island is safe from all winds, but the channel leading to it is narrow, circuitous, and being studded with dangers should not be attempted without a pilot, whose services can be procured by making the usual signal when off the light-house. In the event of a vessel being caught in the sound during a southwest gale and compelled to run for the inner anchorage, the following directions may prove serviceable:

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Directions.—If from the sound anchorage steer to the NE., inside the Hen and Chickens, until the north end of Ship's stern bears N. 17° W., when it should be steered for, keeping about 200 yards from its east side, and passing on the western side of the beacon about the same distance. After passing the beacon steer to pass about 400 yards from the Bunker Island shore; about 250 yards to the northward of Battery Point good anchorage will be found in 5½ fathoms.

Lurcher Shoal consists of two shoal patches, distant from each other 2¼ miles N. 31° E. and S. 31° W., having between them a deep-water channel with 7 to 17 fathoms. The SW. shoal is the larger and shoaler, having only 9 feet water, and shows a considerable rip during the strength of the tidal stream; it bears N. 80° W., 14¾ miles from Yarmouth light-house, and breaks in heavy weather.

The NE. shoal has 5 fathoms on it, and shows a good tide rip.

Automatic buoy.—An automatic buoy, painted *red*, with the letter L in *white*, and sounding a 10-inch whistle, is moored in 13 fathoms water ⅓ mile west of Lurcher Shoal.

Tides.—At the NE. Lurcher Shoal the ebb stream commences at 1h. 30m. after the time of high water at Yarmouth; at neap tides it attains a velocity of 2½ knots, the average set being 9½ miles, in a southerly direction. The flood sets in an opposite direction, its greatest rate at neaps being 2½ miles and its average set 8 miles. The slack is full one hour in duration.

Coast.—From Cape Fourchu, in the immediate vicinity of Yarmouth Coast, as far as Cape St. Mary, a distance of 17½ miles, the coast line is of an undulating character, varying in elevation from 20 to 100 feet, and with the exception of one off-lying danger, viz, Trinity Ledge, is remarkably exempt from danger; and as a rule may be safely approached even by large ships to the distance of ¾ mile.

Trinity Rock consists of three small heads close together, all of which uncover at low water springs, the highest being 2 or 3 feet above the water, and the others just seen. This danger bears S. 33° W. 6¾ miles from Cape St. Mary, and N. 31° W. 13½ miles from Cape Fourchu; it causes a great rip during the strength of the tide, and breaks heavily in bad weather; the rock should not be approached nearer than ½ mile. The western side of the rock is marked by a red bell buoy.

The tidal stream runs with great strength at the rock, attaining a velocity of 2 knots; the ebb sets about S. 30° E., and the flood N. 30° W.

St. Mary Bay is of peculiar formation, its western shore consisting of a mere strip of land, upwards of a mile in breadth, and forming a natural breakwater for a distance of 30 miles, with a varying elevation between 430 feet at its neck and 100 feet on Bryer Island. Through this natural barrier are two narrow navigable channels, known as Grand and Petit Passages, through which the tide rushes with great velocity; the latter is the shortest route between St. John and Cape Fourchu, and being entirely free from danger is available for steam vessels, or sailing vessels with favorable wind and tide.

The St. Mary shore of Long Island is bold to, and a vessel can pass tolerably close along it, except in rounding Dartmouth Point, off which some ragged rocks lie nearly 300 yards distant.

After passing Petit Passage, the western coast of St. Mary Bay is generally bold and straight; it may safely be approached to 200 yards as far as 4 miles beyond East Sandy Cove; after which the water gradually shoals to the head of the bay.

The principal trade at St. Mary Bay is in ship's and cord wood.

St. Mary Shoal.—To the northeastward of East Sandy Cove lies St. Mary Shoal, which is the only detached danger in the bay. It is of large extent, and has a deep channel on both sides. A rock with only 5 feet water rises from the shoal about a third of the distance across the bay from the western shore, and from it the east point of East Sandy Cove bears S. 62° W. 3 miles, the NW. point of Gilbert Cove S. 75° E. 2½ miles, and the south tangent of the remarkable red cliff at the head of the bay N. 48° E. 6 miles.

Tides.—At the head of the bay the height of the tide is affected by the winds; those from the SW. keeping the water above its mean height, and those from the NE. below that point. The stream sets parallel to the coast from a half to two-thirds of a knot per hour.

Directions.—When off Cape St. Mary, and bound up the bay, the coast may be approached within ½ mile until near Montegan, where it becomes low; beyond this, rocky ridges extend off the coast, as far as Como wharf; and the shore should be given a berth of at least a mile. Beyond Como wharf the shore becomes cleaner, until within a short distance of the entrance of the Sissibou River, where a shoal extends off. Keep about a mile off shore, and when the remarkable notch in East Sandy Cove, on the Digby Neck shore, shows open, steer towards the entrance of the river where good anchorage will be obtained in about 5½ fathoms, mud, about ½ mile from the shore.

Sissibou River can only be entered by boats at low water, when only small vessels can lie afloat in it. About 4 miles NE. of the river is Gilbert Cove, affording the best anchorage in the bay, and the coast between can be approached to about ½ mile, except at a point which lies 1½ miles southwestward of Gilbert Point, where a shoal extends nearly ½ mile from the shore; a road from the interior to the shore points out the direction of the shoal. After passing this shoal a vessel may steer towards Gilbert Point, beyond which good anchorage will be found in about 4 fathoms, over muddy bottom. Fresh water can be obtained from a stream running over the rocks near an old mill. Beyond Gilbert Cove the water shoals to the head of the bay.

Anchorage.—Large vessels may anchor in any part of St. Mary Bay between East Sandy Cove and Sissibou River, in 10 to 12 fathoms water, and with good ground tackle may ride out any gale, as the sea at this anchorage, even with southwesterly winds, to which it is exposed, becomes exhausted.

There are three anchorages on the western shore of the bay, viz, Little River, Mink Cove, and East Sandy Cove; the last, being the largest and most sheltered, is most frequented. In it vessels of 12 feet draft can find good shelter from all winds between south round by west to NNE., and if distressed by a southeasterly wind they can find security by running on the mud. Fresh water can be obtained at the head of the cove when the tide is up, except during dry seasons.

Bryer Island Southwest Ledge has only 13 feet on its shoalest part, which lies with Dartmouth Point, seen just open westward of Gull Rock, and is distant from the latter nearly 2 miles S. 45° W. Between this ledge and Gull Rock there is a channel 1½ miles wide, and the rock can be approached to ¼ mile on its sea side.

Bryer Island Northwest Ledge is of large extent, and lies to the NW. of Bryer Island, with deep water close to its NW. side. There is a good passage between it and Bryer Island, the northwestern shore of which may be approached to ¼ mile.

Northwest Rock is small with only 6 feet water, and from it Bryer Island light-house bears S. 8° E. nearly 4¼ miles. Mourilyan mark (a large granite bowlder) on a hill on Long Island in line with the north point of Bryer Island bearing S. 50° E. leads northward and eastward of this rock, and the whole ledge. A bell buoy painted red and black in vertical stripes lies 400 yards N. 47° W. of this rock.

Beatson Rocks consist of two small rocks, 200 yards apart, with 12 and 13 feet water. The northeastern, with 12 feet, lies with the Northwest Rock, bearing N. 51° E. one mile (the passage between having not less than 6 fathoms); and Bryer Island light-house S. 21° E. 3¾ miles.

The Northwest Ledge extends some distance southward of Beatson Rocks; during the strength of the tide it shows a heavy tide rip along its whole length, and breaks heavily on its shoal parts when there is much sea.

Gull Rock, seen well open of Whipple Point bearing S. 18° E. leads SW. of Beatson Rocks in 10 fathoms, and Gull Rock in line with Whipple Point, bearing S. 14° E., leads between Beatson and Northwest Rocks.

Frenchman Elbow is a long rocky strip, having on its shoalest part 5½ fathoms; and lies between Northwest Rock and the north point of Bryer Island, being about one mile distant from the former.

Tides.—The tidal stream runs very strong over the Northwest Ledge, the ebb taking a southerly and the flood a northerly direction, at the rate of about 4 knots at half tide. The stream changes about three-quarters of an hour after that in Grand Passage, or nearly about the time of high and low water there.

Grand Passage and Westport.—Grand Passage, between Bryer and Long Islands, is narrow and contains several dangers, but the principal difficulty connected with its navigation is the great velocity of the tidal streams through the channel.

Supplies.—Westport carries on a considerable trade in fish, and from it limited supplies may be obtained. A small supply of fresh water may also be procured from wells.

Pilots.—Pilots for St. John, New Brunswick, can be obtained at Westport.

Passage Shoal, with 5 feet of water, shows a tide rip; it lies in the middle of the passage, N. 14° W. from the light-house on Peter Island, and ⅓ mile from its nearest shore.

Cow Ledge extends 300 yards off the Long Island shore of the northern entrance of Grand Passage; its highest part uncovers soon after high water.

Cow Ledge Shoal, with 14 feet water, lies ¼ mile northward of the highest part of Cow Ledge, and S. 67° E. 600 yards from the north point of Bryer Island.

Tides.—The stream commences running to the southward full half an hour before high water by the shore, and runs with great velocity

through Grand Passage, especially through the two channels at its southern entrance, where it attains a rate of from 4 to 5 knots per hour.

Directions.—West of Peter Island.—At the southern end of Grand Passage there is a channel on each side of Peter Island, the one on its western side being the shorter and narrower of the two, with 16 to 20 feet water and clear of danger. If making for the western entrance, keep in mid-channel, and if the flood be running bear in mind that the tide sets with great strength directly on the south point of Peter Island.

The anchorage off the town of Westport is in 5 to 7 fathoms water, with the Episcopal church bearing S. 33° W. and the Baptist chapel S. 76° W.

If bound through Grand Passage, after passing through the western entrance, avoid opening Dartmouth Point, east of Peter Island, until the Episcopal church bears S. 31° W., when a course may be steered for the northern entrance, through which Peter Island light-house bearing S. 2° E., or with the island open its own breadth west of Sand Point, leads in the deep-water channel west of Cow Ledge and Cow Ledge Shoal.

When the north point of Bryer Island bears N. 75° W. the vessel will be clear of Cow Ledge Shoal, and by keeping Peter Island light-house in sight will pass a long way to the eastward of Northwest Ledge. After passing Cow Ledge Shoal, Long Island may be approached to 200 yards, but the north point of Bryer Island should not be rounded within ¼ mile.

East of Peter Island.—On nearing the passage give Dartmouth Point a berth of ¼ mile and pass along the east shore of Peter Island, which may be safely approached to within 200 yards. When Peter Island light-house bears S. 2° 37′ E. follow directions already given for northern entrance.

If intending to anchor at Westport, after passing Peter Island, steer sharp round the north end of the island when the Episcopal church bears S. 67° W. and pass between the shoal spit off the north end of the island and Passage Shoal, on which the flood sets with great strength.

Caution.—The foregoing directions for entering Grand Passage from the southward are adapted for flood tide and a leading wind, and any departure therefrom must be contingent on the state of the tide and direction of wind.

Strangers should not attempt the anchorage off Westport without the assistance of local knowledge, as the tides in the entrance, with a velocity of 5 or 6 knots an hour, form eddies and whirlpools likely to bring a vessel round against her helm and cause her being stranded.

Petit Passage, between Long Island and Digby Neck, though narrow, is available for steam vessels, and for sailing vessels also, if the latter have a favorable wind and tide.

The passage forms the shortest route between St. John Harbor and Cape Fourchu, and is almost entirely free from dangers, the exception being a small rock, with 8 feet water, lying N. 11° E. from the light-house, nearly 400 yards from the nearest part of Boar Head. There is a passage with 4 fathoms between the shore and this rock, which shows a tide rip during the strength of the tide and breaks in heavy weather.

On the western shore of the passage an eddy is formed to the northward of Eddy Point, where small vessels may anchor close inshore, but they require to be moored head and stern.

Tides.—The stream runs through the passage at the rate of 6 or 7 miles an hour; the ebb from the northward and the flood from the southward.

Directions.—When entering the passage keep a mid-channel course until approaching Eddy Point, which projects into the passage, when close the western shore, which is steeper-to than the eastern side in the vicinity of Sandy Point. Off the south point of Digby Neck are some rocks which cover at half flood and extend about 200 yards offshore in a southerly direction.

When off Cape St. Mary and running for Petit Passage on the ebb, steer for the middle of Long Island until the strip of tide running from the passage towards the cape is passed; and when within it a feeble eddy will be found on the Long Island shore setting towards the passage, increasing in strength and decreasing in breadth as it nears the passage, where it extends as far as Eddy Point.

When in the Bay of Fundy and wishing to enter Petit Passage on the ebb, make the Digby Neck shore to the eastward of the passage, and skirt it along until in the passage in order to avoid being swept past the entrance. The Digby Neck shore is steep-to, and may be approached in safety to 400 yards.

Coast.—The Bay of Fundy shore of Long Island is steep-to until approaching Boar Head, when the 8 foot detached rock already referred to must be avoided; only small vessels or steam vessels with local knowledge should attempt to pass inside it.

The land on Digby Neck is partially wooded, more thickly on the side of Fundy Bay than that of St. Mary, and slopes gradually towards the Bay of Fundy shore. At West Sandy Cove and Gulliver Hole there are tolerably high cliffs, and the hollows through the neck at each of these places present a remarkable appearance.

West Sandy Cove affords good anchorage, being sheltered from all winds between NE. round by south to SW. Care must be taken to avoid a rock with 6 feet water lying N. 28° E. 600 yards off the western point of Western Sandy Cove, with a deep channel between it and the shore.

Tides.—It is high water, full and change, at West Sandy Cove at 10h. 47m.; springs rise 23 feet; neaps 19 feet.

Gulliver Hole is free from danger and also affords good anchorage, with all winds from NE. round by south to west.

Digby Gut is a narrow opening ½ mile in breadth, with steep acclivities on each side, and a deep-water channel leading into Annapolis Basin, on the western side of which stands the town of Digby. The inhabitants, numbering about 2,000, are engaged in lumbering and fishing.

Charges.—Pilotage, $10 or $12 according to agreement; hospital dues, 2 cents per ton; labor, $1.50 per day; lumber is delivered to vessels loading, free, alongside the wharf.

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Within Prim Point, on the western shore of the entrance, is Man-of-war Rock, distant about 200 yards from the high-water line, and steep-to on its eastern side.

Tides.—Along shore the tidal stream runs nearly parallel to its trend at the rate of 1½ to 2 knots, turning inshore a little before the time of high and low water respectively, and offshore a little later.

Through the gut the stream of ebb and flood sets with a velocity of 4 to 5 knots an hour, causing various eddies and whirlpools; the truest stream will be found on the eastern side.

Directions.—Vessels wishing to obtain temporary anchorage may find it at the entrance of the gut, on the western side, about ½ mile within the light-house. Here the anchorage is good in about 7 fathoms, mud, about 200 yards from the shore, and sheltered from all winds except between WNW. and NE. In approaching the land in thick weather, great caution is necessary when in less than 35 fathoms water.

If proceeding to the anchorage near the town of Digby, steer a mid-channel course through the entrance, and then bring the eastern point of entrance to bear N. 11° W. and keep it astern; this course will lead between the outer shoal tongue of an extensive spit at the extremity of which there is a black buoy, and the western shore, and when Bear Island appears midway between the points of entrance of Bear River, anchor in 6 to 8 fathoms.

When proceeding through the narrows sudden gusts of wind are frequently experienced, caused by the almost precipitous nature of the hills overlooking the gut. Vessels bound up the river to Annapolis should obtain the assistance of local pilots.

Anchorage.—The anchorage off Annapolis is bad, owing to the numerous eddies, which in a short time cause a ship to foul her anchor. Vessels should moor with a swivel, or head and stern.

Pilots.—As pilots for Annapolis are difficult to obtain, application should be made to the comptroller of customs at Digby.

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Coast from Digby Gut to Cape Split.—The land is undulating and thickly wooded, but with partial clearings, and from the shore assumes a gradual ascent until it attains an elevation of 400 to 600 feet at the distance of 2 or 3 miles from the sea.

To the eastward of Chute Cove this regularity of formation is diver-

sified by perpendicular cliffs about 100 feet high, and forming small bays, on the points of which settlements have been made, and piers built to facilitate shipping cordwood, which at present is the chief export. Small vessels can lay alongside the eastern side of these piers, which act as breakwaters, where they ground every tide.

Water.—The coast from Digby Gut to the eastward abounds with fresh water, which runs in streams down the slopes of the hills into the Bay of Fundy. Boats can obtain good water from the mouths of the streams after half flood.

Chute Cove.—A pier or breakwater extends off from the middle of the cove, and there is also a post-office, which is in communication with Bridgetown by means of a road by the hill.

St. Croix Bay, about a mile to the eastward of Chute Cove, is separated from it by a low green point; this bay affords the best anchorage along the coast eastward of Digby Gut.

Anchorages.—Off Chute Cove anchor with the breakwater S. 64° E. distant 600 yards, and about 400 yards off shore, in 4½ fathoms mud.

In St. Croix Bay anchor with its west point bearing S. 66° W. at the distance of ¼ mile offshore in 4 fathoms, mud.

Port George lies nearly 5 miles to the eastward of Marshall Cove and exports live stock, potatoes, and cordwood; there is a post-office at this place.

Wilmot Rock uncovers at half tide, and lies about 250 yards east of the small pier at Port George, and 300 yards from the high-water line.

Margaretville.—Care must be taken in approaching Margaretville to avoid a shoal a mile in length and parallel with the shore, from which it is distant about ½ mile; the shoalest part, with 2 feet water, lies ⅝ mile from the small pier near the lighthouse.

Between the west end of this shoal, with 2 fathoms, and the breakwater there is a 3-fathom channel ¼ mile broad.

Morden or French Cross may be recognized by the square tower of its Episcopal church. There is also a post-office, as well as a small pier, alongside of which vessels lay aground, and ship agricultural produce and cordwood.

About ⅓ mile eastward of Morden Breakwater, and 400 yards offshore, there is a small bank which dries at low water. Vessels should keep outside until there is sufficient water to pass over it.

About a mile eastward of Morden is Joliffe Head, a high perpendicular cliff of a reddish color, and farther on are two small piers, known as Ogilvie and Gibbon Breakwaters, the latter being 6½ miles from Morden.

Anchorages.—The best anchorage near Port George is in about 5 fathoms, at the distance of one mile eastward of the pier.

Off Margaretville vessels should anchor within the shoal in about 5

fathoms, sand, at the distance of ¼ mile from the shore, with the high-water line of Port George in line with Margaretville Point.

The anchorage near Morden is in about 6 fathoms a short distance eastward of the breakwater.

Black Rock, from which the locality derives its name, is 21 feet above low-water springs, and covers about half flood; it bears from the light-house N. 47° E. nearly ¼ mile. At low water the rock dries about 200 feet outside its apex.

Small piers extend out abreast Canada Creek, Chapman Brook, and Hall Harbor, all to the eastward of Black Rock light-house, from which they are respectively distant one, 4, and 6½ miles.

Outside Canada Wharf, at the distance of ⅛ mile off shore, is a shoal spit having only 11 feet water.

Off Shoal Point, about 1¾ miles east of Hall Harbor, some rocks extend offshore ¼ mile.

Anchorages between Digby Gut and Cape Split.—Vessels can anchor all along this part of the NW. coast of Nova Scotia, with winds from east, round by south, to SW., in about 12 fathoms water, free from rock, at distances varying from ¼ to ½ mile offshore.

In some of the bays a closer anchorage may be obtained, with soft bottom and greater shelter; but when the wind is strong from SW., or more westerly, the ebb tide, which runs at the rate of from 2 to 3 knots along shore to the westward of Morden, renders the anchorage along the coast unfit for small vessels, and they are advised to stand off and on during the ebb.

Scotsman Bay.—Vessels bound to the Basin of Mines arriving off Cape Split and unable to proceed through on account of the strong ebb tide, may anchor on the west side of the cape, about one mile from its extremity, and 400 yards offshore, in about 10 fathoms, with the outer hill of Cape Split in line with the nearest point bearing N. 39° W.

In the fall of the year, when gales frequently commence from the eastward and suddenly shift to the westward, the anchorage in Scotsman Bay is dangerous.

Tides.—It is high water, full and change, at Black Rock Point at 11h. 29m.; springs rise 36 feet, neaps 31 feet.

Isle Haute, about 1¼ mile in length and ¼ mile in breadth, attains an elevation of 320 feet, is thickly wooded, and is surrounded on all sides, excepting the east and west points, by perpendicular cliffs. Its western point is formed by a steep, grassy slope, and off its eastern point is a stony spit which uncovers at low water about ⅛ mile out. Excepting off this point the island is steep-to, and may be approached in safety within ¼ mile.

Anchorage.—Vessels may anchor on the NE. side of Isle Haute in about 12 fathoms, within the eddy about 250 yards from the east point of the island.

Cape Split is the termination of a tapering promontory, forming the

southern point of entrance to the Basin of Mines, and consists of perpendicular cliffs about 200 feet high, which are divided by several deep fissures or splits, hence the name.

Two small detached rocks, which just uncover at low-water springs, lie off the ditch of Cape Split in a N. 53° W. direction, at the respective distances of ¼ and ⅛ mile. There is a passage between the rocks, as well as between the inner rock and the cape. During the tide a very heavy tide rip extends considerably beyond these rocks.

Cape Chignecto is very conspicuous, as the land in its immediate vicinity attains an elevation between 700 and 900 feet, being thickly wooded and intersected by valleys. On the SE. side the high land falls suddenly, and terminates in many places on the shores of Advocate Bay in high cliffs. The shores of the cape have deep water close-to.

Cape D'Or, a low green point 7⅞ miles S. 75° E. from cape Chignecto, is the southwestern extremity of a high ridge of land, separated from that of Cape Chignecto by a deep valley.

This ridge terminates on its western side in cliffs 200 feet high, and falls abruptly towards the low point of Cape D'Or.

Advocate Bay lies between capes Chignecto and D'Or, and near its head affords good anchorage with northerly winds, but care must be taken to get under way as soon as the wind hauls round to the southward, as in such cases it frequently veers round to, and blows hard from the westward.

Advocate Harbor.—From the middle of Advocate Bay a natural sea wall composed of stones extends in an almost continuous manner to the western point of Cape D'Or. This wall or causeway is about 10 feet above high water, but between it and the shore of Advocate Settlement—a distance of ⅔ mile—is a deep basin with a muddy bottom, which only dries one or 2 feet at low water springs.

Near Cape D'Or there is an opening through the causeway at high water, and vessels pass through into the basin or harbor inside, where they of course ground at low water, but are protected by the stony wall outside.

There is a small anchorage near the entrance in which small craft—if moored—can lay afloat at low water. As the passage into the harbor frequently shifts during westerly gales, no vessel should attempt to enter without local knowledge.

Shoal.—About ½ mile east of Cape D'Or the shore trends to the northward toward Horseshoe Cove, and forms a point, off which lies a detached stony shoal which dries at low water.

Cape Spencer may easily be recognized by a remarkable sugar-loaf rock isolated at high water, above which it rises 20 feet. The cape should not be approached nearer than 400 yards.

Spencer Island is small, thickly wooded, and 180 feet high; it is separated from the mainland near Cape Spencer by a channel about ¼ mile broad in which there is as little as 6 feet water.

Tides.—It is high water, full and change, at Spencer Island, at 11h. 42m.; springs rise 39 feet, neaps 33 feet. The tidal stream attains a velocity of 6 knots an hour.

Anchorage.—To the northward of Spencer Island there is good anchorage safe from all winds excepting from east to south, in about 5 fathoms, mud and sand, with the east end of Spencer Island bearing S. 33° E. about ⅔ mile. Vessels tide-bound can anchor anywhere between Spencer Island and Fox Point, in about 5 fathoms water and ½ mile off-shore.

Tides between Digby Gut and Cape Split.—From Digby Gut to the head of Scotsman Bay the tidal stream runs parallel with the shore, and during the strength of the tide attains a velocity varying from 2 knots off Digby to about 3 knots off Black Rock lighthouse, from whence to the head of Scotsman Bay the rate again diminishes.

From Cape Chignecto to Cape D'Or the flood sets nearly straight, and makes a long rip off Cape D'Or to the distance of a mile in a southerly direction, caused by meeting an eddy setting towards Cape D'Or, along its eastern shore. Inshore between the above capes the flood makes a circuit of Advocate Bay; but on the ebb an eddy is formed to the westward of Cape D'Or.

At Spencer Anchorage, except about the first hour of ebb, the set of the tide tends towards Spencer Island. Round Cape D'Or and Spencer Island the tidal current runs from 5 to 6 knots an hour, and round the end of the rip off Cape Split it attains a velocity of 7 or 8 knots.

Close inshore the stream of tide changes its direction a little before, and in the offing a little after, the time of high and low water by the shore. Between Digby and Black Rock lighthouse it changes inshore from 15 to 30 minutes, and to the eastward of Hall Harbor from one to 2 hours before the time of high and low water.

Directions.—When approaching Cape D'Or with a flood tide, keep well off the cape, beyond the influence of the tide rip; if with an ebb tide and a commanding breeze round Cape D'Or close to, but unless the wind be fair and strong it would be advisable to keep the vessel in the eddy west of Cape D'Or until the ebb has ceased running.

Basin of Mines.—The entrance to the Basin of Mines lies between Fox Point on the north, and Cape Split, the distance between these points being 3¼ miles. The length of the basin in a straight line between Cape Split at its entrance and the town of Truro at its eastern extremity is exactly 50 miles, with a varying breadth.

The northern shore of the basin between Fox and Economy Points is high, and varies in elevation from 250 to 400 feet, gradually rising within a few miles of the coast to a well-wooded range known as Cobequid Mountains, being a continuation in an easterly direction of the range north of Cape Chignecto.

This mountainous range attains in some places an elevation of more than 800 feet; it is deeply intersected by numerous valleys, through

which small rivers descend to the sea, and is also well wooded but with partial clearings near the shore. To the eastward of Economy Point the shore gradually declines in altitude to the head of the basin.

The Basin of Mines receives the waters of numerous rivers, the principal being Avon River to the southwest, into which the St. Croix and Kennetcook rivers discharge their waters, and the Shubenacadie River near the head of the basin.

The southern shore of the Basin of Mines is bold from Cape Split to about 2 miles south of Cape Blomidon, with high precipitous earthy cliffs, varying in elevation from 200 to 600 feet, and thickly wooded on their summits. From the above position the high ridge over Cape Blomidon slopes rapidly to the valley of Cornwallis River, where the land is well cleared and intersected by numerous valleys.

A ridge, of which Horton Bluff is the eastern extremity, separates the valleys of Cornwallis and Avon. To the eastward of Avon River the land is intersected by valleys, thickly wooded in some parts, but partially cleared in others.

Avon River.—The approaches to Avon River are rendered difficult on account of extensive flats, which from the nature of the bottom and velocity of the tides must be continually shifting their position; and as the channels between are narrow and circuitous, without any well defined leading marks, it is absolutely necessary that strangers should obtain the services of a local pilot.

As a detailed description of these dangers would be of no possible benefit to seamen, it will suffice to give hereafter a few directions, in case of necessity, for attaining the anchorage near Horton Bluff at the entrance of the Avon.

Windsor.—The town of Windsor, and capital of County Hants, stands at the confluence of the Avon and St. Croix Rivers; it lies 30 miles NW. of Halifax, with which it is connected by railway.

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Tides.—It is high water, full and change, at Horton Bluff at 0h. 30m.; springs rise 48 feet, neaps 40 feet.

Hogback Shoal is a sandy shoal upwards of 2½ miles long, very narrow, and running parallel with the shore. It dries on its south side, which is separated from Cambridge Flats by a channel nearly a mile broad, having about 3 fathoms water, and is distant from the south shore 1¾ miles.

Walton Bar, composed of sand, lies a short distance eastward of the town of Walton, and dries at the distance of 1¼ miles offshore; its outer tangent is in line between the center of the Hogback and Burncoat Head lighthouse.

Between Walton Bar and Burncoat Head the low-water line extends about ½ mile offshore.

Tides.—It is high water, full and change, in Noel Bay, just to the eastward of Burncoat Head, at 12h. 41m.; springs rise 50½ feet, neaps 43½ feet.

Cape Sharp derives its name from a remarkably sharp eminence, 300 feet high, with which it terminates; it is 5⅛ miles from Fox Point, and with the shore of the Cape Split promontory, from which it is distant only 2⅔ miles, forms the narrowest part of the entrance to the Basin of Mines.

Black Rock, with an elevation of 15 feet above high water, and of small extent, lies ½ mile from the nearest shore, and N. 86° W. ¾ mile from Cape Sharp. A deep-water channel exists between the Black Rock and the shore, but as the streams of tide set directly on the rock this passage should never be attempted.

West Bay is about 2¼ miles across between Cape Sharp on the west and Partridge Island on the east. Nearly the whole of the bay is occupied by a shoal bank of sand and gravel, the shoalest part, having 1¼ fathoms, lies a little on the east side of the middle of the bay and ⅛ mile off shore, with Cape Split just shut in with Cape Sharp.

There is not less than 3 fathoms on other parts of this bank, whilst within it, about ¼ mile from the shore, is a narrow belt of deeper water with 5 or 6 fathoms.

Anchorage.—West Bay affords good anchorage towards its western side in about 6 fathoms, mud, with Cape Sharp bearing S. 40° W. ½ mile distant, protected from all winds, save those from NE. to south. The tide current, except [illegible]r about one hour after low water, sets towards Cape Sharp.

Tides.—It is high water, full and change, in West Bay at 12h. 4m.; springs rise 45 feet, neaps 35 feet.

Partridge Island attains an elevation of 240 feet, and is connected by means of a gravel neck to the shore. The anchorage east of this island is not good.

Frazer Head is 390 feet high, and, with the exception of two hardwood trees close together, is quite bare; the south rounding of the head should not be approached within ¼ mile.

The Brothers are two small, thickly wooded islands about 1¼ miles eastward of Frazer Head, and are both included within the low-water line of the main shore. A small patch of rocks, which uncover, lie S. 61° E. about ⅛ mile from the south extreme of the southern Brother Island.

Five Islands extends in almost a straight line S. 76° W. from the western end of Red Head, the westernmost being 3½ miles distant. The eastern island is much the largest of the group, thickly wooded, and attains an elevation of 350 feet, with steep earthy cliffs on its southern shore; these islands are nearly joined to each other and the main at low water. Between Five Islands and Economy Point the cliffs bordering the sea attain in some parts considerable heights, and are remarkable from being red.

White Rock, so called from its appearance, is 10 feet above high water, and is in line between the eastern of the Five Islands and the SW. tangent of Economy Point, being 3¼ miles from the latter.

Brick Kiln Island, very small in size and about 50 feet high, with red cliffs, lies about 2 miles west of Economy Point on the margin of the low water line.

Brick Kiln Ledges are two in number, with their centers bearing S. 70° W. of Economy Point, from which the western ledge—which uncovers 2 hours before low water—is 3 miles distant. Between this ledge and White Rock are numerous rocks, and strangers are advised to avoid their locality.

Economy Point, on the northern shore, is nearly 21½ miles east of Cape Sharp, and 4 miles N. 63° W. from Burncoat light-house. Between the light-house and Economy Point is the eastern limit of what may be termed general navigation, nor should this line be passed by any vessel unless in charge of a local pilot, as further up the basin are many shoals formed of loose shifting sand, which are constantly altering their position.

Economy River.—Vessels of 15 feet draft can proceed to the sawmill in Economy River at high water every day, and those of 19 feet draft at high water spring tides.

Tides in the Basin of Mines.—As the great rise and fall, as well as the velocity of the tides, form such important elements in the navigation of the Basin of Mines, it is essentially necessary that both should be carefully studied by seamen entering the basin.

In the passage to the Basin of Mines near the Cape Split shore the tidal stream attains a velocity of 7 to 8 knots an hour, but in the center and near the northern shore it decreases to 5 or 6 knots. Between Cape Split and the head of the basin the strength varies from about 3 knots in the wider parts to 4 knots where the channel is contracted, its direction being modified by the trend of the land.

Directions.—In navigating the Basin of Mines seamen must bear in mind that the various banks and bars are as a rule composed of loose shifting sand, and that rapid tides and strong winds cause them to alter their positions, especially after heavy gales and in the spring on the breaking up of the ice.

Vessels desirous of reaching the anchorage at the entrance of Avon River without the assistance of a pilot should bring Cape Blomidon to bear N. 30° W., and keeping it astern on the above bearing, pass between Cross and Western Bars (this course, however, will lead over 1½ fathoms at low water), until Horton light-house bears S. 11° E.; then steer for it on that bearing and when the wooded point east of Horton River is in line with the highest point of Long Island anchor in about 7 fathoms.

From the fairway between the tide rip off Cape Split and Fox Point steer S. 78° E. until abreast Cape Sharp, from whence if bound to Parrsboro River steer to round Partridge Island at a moderate distance; keep Cape Split in sight until Parrsboro lighthouse bears N. 22° W., when steer for it, and pass close round to the eastward of the spit on

which the light-house stands. This river can only be entered about one hour before high water, and when within the light-house, vessels can lay on the mud at low water in perfect safety.

If bound up the basin, after passing Partridge Island steer about east, and when Parrsboro lighthouse bears N. 72° W. keep it on that bearing, and steer S. 72° E. until Burncoat lighthouse bears east, when steer for it on this bearing—which will lead southward of Brick Kiln Ledge—until abreast Economy Point, beyond which the services of a pilot should be obtained for reasons already assigned.

In moderate weather vessels may anchor along the shores of the Basin of Mines, but on the northern shore the bottom is hard, and therefore the anchorage is inferior to that on the south shore. Vessels may also ascend various small rivers, but the latter can only be entered at high water, and as a matter of course vessels are dry at low water.

Off Cornwallis River the best anchorage is in 5 to 6 fathoms, sand, with Horton lighthouse seen just open east of Boot Island bearing S. 36° E. and the northern tangent of the south point of Pereau Creek S. 85° W. This anchorage may be considered good with all but north-easterly and easterly winds, and when approaching it care should be taken to avoid shutting in the west point of Partridge Island with Cape Blomidon.

CHAPTER IV.

NOVA SCOTIA, SOUTHEAST COAST.—PORT LATOUR TO SAMBRO HARBOR.

Coast.—The seaboard of the SE. coast, between cape Sable to the SW. and cape Canso to the NE., is no less than 230 miles in a straight line; the general trend being about NE. and SW. Throughout the whole extent of this rocky coast are numerous indentations, varying in size and utility, from the narrow creek in which boats seek shelter to noble harbors, of which Halifax is the largest, most accessible and safest.

The coast is fringed by numerous islands and sunken dangers which, by breaking the sea, tend to facilitate the progress and promote the safety of the local coasting trade; but to insure its successful prosecution, local knowledge of the coast and its dangers is indispensable; the more so as the fogs—of a density seldom experienced elsewhere—are very prevalent during the greater part of the year.

Port Latour is a bight open to the southward, but in consequence of its numerous dangers, shallow water, and bad anchorage, is only used by small fishing vessels. The only safe anchorage is east of John Island, but it is small and studded with rocks, and should not be attempted by any but those possessed of good local experience.

Baccaro Outer Ledge, about $\frac{1}{4}$ mile in length, and $3\frac{1}{2}$ fathoms on its shoalest part, lies with Baccaro light-house N. 66° W. nearly $1\frac{1}{2}$ miles, and Blanche Island south point N. 50° E. $2\frac{1}{2}$ miles.

South Ledge consists of several rocks, the southwesternmost of which is always seen, and from it the northern rock—which uncovers at a quarter ebb—bears N. 6° E. 300 yards, and Baccaro light-house S. 67° W. $1\frac{1}{3}$ miles.

Stone Horse, at the eastern end of the South Ledge, has only 4 feet water, and is $\frac{1}{4}$ mile distant from the southern rock of South Ledge in a S. 79° E. direction.

North Ledge, about $\frac{1}{4}$ mile in length, has on its northern end a rock 3 feet above high water, and on its SW. end is a small rock which is awash at low water. From the latter rock the high water line north of Baccaro Point is distant $\frac{3}{4}$ mile, and Baccaro light-house bears S. 50° W. $1\frac{4}{10}$ miles.

Cuckold Rock, awash at low-water springs, is a small detached rock between the South Ledge and Baccaro light-house, which latter bears from the rock S. 65° W. $\frac{2}{3}$ mile.

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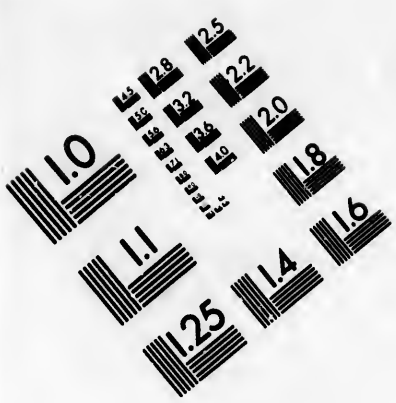

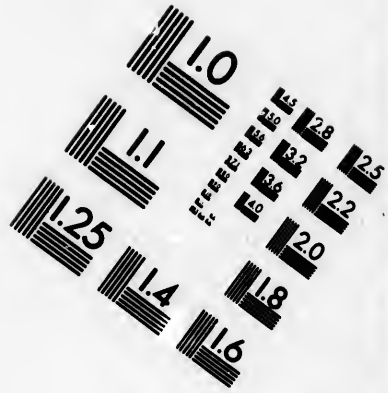

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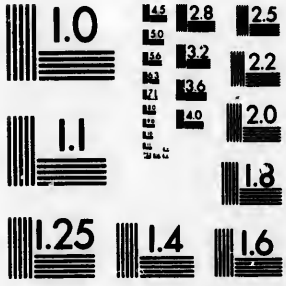

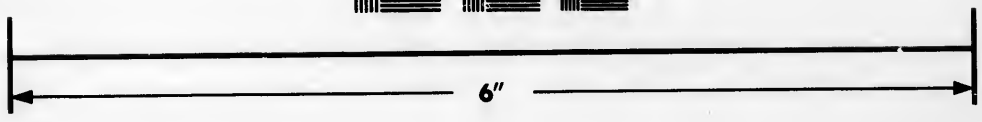

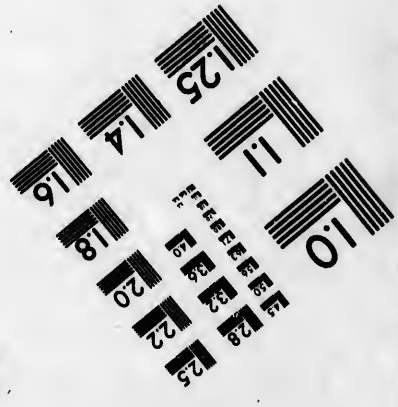

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Shot Pouch is a rocky shoal 400 yards in extent, the center being ⅓ mile S. 59° W. from Baccaro light-house.

Bantam Rocks, which uncover at low-water springs, are 100 yards apart, and form the highest part of a dangerous rocky ledge nearly ¼ mile in length. From the rocks which nearly always break, Baccaro lighthouse bears N. 30° E. about a mile. A red whistling buoy is moored ¼ mile S. 27° W. of the rocks.

Brazil Rock is a dangerous off-lying rocky shoal having only 12 feet over it, with deep water close-to; the sea breaks heavily on this rock in bad weather, but during fine weather it is only marked by a tide rip. From the rock Baccaro light-house bears N. 12° W. 5½ miles, and Cape Sable light-house N. 78° W. 8 miles.

Bell Buoy.—A bell buoy painted with *red* and *black* horizontal stripes, is moored in 19 fathoms water, about 200 yards south of the Brazil Rock.

Negro Harbor derives its name from Negro Island at its entrance. At the head of the harbor the river Clyde flows into the inlet; here several mills are established, from whence a small quantity of lumber is exported. Water can be obtained in small quantities. There are two channels into the harbor, but both are rendered difficult in consequence of numerous dangers. The anchorage, however, is safe in all weathers for vessels of moderate draft, and, though not so accessible as Shelburne, may be of service to vessels requiring shelter.

Negro Island attains a greater elevation than the adjoining coast, and is of a somewhat remarkable appearance, being all but divided in two, the connecting link being a low narrow shingle causeway. On its southeastern end is Cape Negro, dark and rocky, from whence a barren slope rises to a conspicuous fringe of dark fir trees on the summit of the island.

From the NW. point of the island, a long shingle spit extends in a northwesterly direction 800 yards; it is covered at high water, but has deep water close to its outer end. The north tangent of the east division of Negro Island, open of the north tangent of the west division, leads north of the spit.

Off the SW. end of the island, at the distance of ¼ mile, are some small rocks which uncover at low water; and off the intervening point between the NW. and SW. extremities of the island is Mackerel Rock, always above water, and very useful as a mark for the western channel.

The Salvages, consisting of a long line of rocks nearly 2 miles in length north and south, are the southernmost dangers to be avoided on approaching Negro Harbor from the westward; and on their SW. end are two clusters of rocks, the highest parts of which are 10 feet above high water. The east side of this extensive group of rocks is steep-to, which increases the danger of approaching during thick weather or at night.

Lifeboat.—A lifeboat has been placed at Blanche at the western entrance to the harbor.

Triangle Rocks are three distinct rocks nearly equidistant from each other, occupying a central position in the western channel; the two western rocks show at low-water springs, but the eastern rock has 3 feet over it, with deep water all around. From the southern rock Cape Negro is just in line with a high-water tangent next west the cape.

The channel between Mackerel Rock and the nearest of the Triangle Rocks is only 400 yards across between the 5-fathom lines, whilst the passage between the southern Triangle Rock and Shag Rock is about ⅓ mile.

Grey Rocks, ⅓ mile in length, lie off East Point; they are nearly all above water, the largest near the southern end being 10 feet above high water, and steep-to on its south side.

Budget Rock, with only 3 feet water, generally breaks with a moderate swell, and occupies nearly a central position between East Point and the north end of the outer part of Negro Island; but the actual channel with 8 fathoms water is narrowed to less than 400 yards by some detached low-water rocks off East Point. On the north side Budget Rock is steep-to, but on the island side of the rock there is a gradual slope; between this danger and a shoal point extending from Negro Island is a narrow channel with 4 fathoms, but it should not be attempted by a stranger.

Buoy.—A white buoy has been placed to mark Budget Rock, and is of great service to strangers entering the port, but too much reliance should not be placed on its being in its position.

There are several other dangers on the north side of the eastern passage, such as Grog Rock on the east side of the entrance to the shallow bight known as NE. Harbor, and Bartlett Ledge (which just covers at high water) on the western side of the entrance, but there are no good cross marks for these dangers.

Directions.—Eastern Entrance.—The Grey Rocks may be passed within 200 yards, after which bearing the north end of Negro Island to bear N. 88° W., and steer for with the SW. Grey Rocks astern. This course will lead in mid-channel between Budget Rock and the rocks off East Point.

When Cape Roseway light-house appears to touch the east tangent of East Point, Budget Rock will have been cleared, and the course should be altered to N. 78° W., which will lead in a direct route—but over a 3-fathom patch—for a good position off Purgatory Point; when Davis Island east point bears N. 40° W., steer for it, and anchor on the eastern shore in about 3½ fathoms, mud, with the NE. point of Negro Island apparently just touching, or shut in by, Shingle Point.

Western Entrance.—Approaching from the westward give the south end of the Salvages a berth of ¼ mile, and when Cape Roseway light-house is seen just open of Cape Negro bearing N. 24° E., proceed on that

bearing until Purgatory Point appears just touching Mackerel Rock N. 46° W., when steer on the latter course until the SW. point of Negro Island bears S. 85° E., then steer N. 68° W. between Mackerel and Triangle Rocks, and when Shag Rock bears south, steer north until abreast Purgatory Point, and proceed for the anchorage as before directed.

If desirous of passing south of Triangle Rocks, and having Cape Roseway light-house just open of Cape Negro as before, bring Shag Rock to bear N. 79° W. and steer N. 74° W., which will lead in mid-channel between the southern Triangle Rock and Shag Rocks, and when the latter bears S. 44° W., alter course to N. 18° W., and proceed past Purgatory Point for the anchorage according to previous directions.

Cape Negro open of the high water tangent next west the cape is a good mark for keeping south of the southern rock of the Triangle group.

Shelburne Harbor lies 6 miles northward of Negro Harbor. Between the two harbors are several indentations, as well as Grey Island and Gull Rock; but they need no description. It is situated in the eastern arm of an inlet to which navigable entrance lies between the mainland and the eastern side of McNutts Island. The harbor is safe and commodious, and being easy of access is admirably adapted for vessels seeking shelter. Fresh water of an excellent quality is to be obtained.

The United States is represented by an agent.

McNutts Island is nearly 3 miles long by about half that distance wide, and near its center attains an elevation of 130 feet. Between the eastern side of the island, which is steep-to, and the mainland, is a broad clear channel leading to Shelburne Harbor; but the passage on the western side is rendered impassable by an extensive shallow bar, on which in some places there is only one foot at low water.

Cape Roseway.—On the southeastern extremity of McNutts Island is Cape Roseway, a remarkable white granite cliff, on which stands the light-house 77 feet high (forming a prominent day mark).

Jig Rock, with 7 feet water, breaks in a heavy swell and lies $\frac{7}{8}$ mile S. 20° E. from the south point of McNutts Island, there being 4 fathoms over rocky bottom in the channel between.

Bell Rock, a few feet above high water, lies with Cape Roseway light-house bearing S. 54° W. $2\frac{1}{4}$ miles, and Blue Gull Island N. 15° E. $1\frac{1}{2}$ miles.

Straptub Rock lies on the south end of a shallow spit extending from Bony Point on the main shore. The rock uncovers at low water, and from it Bell Rock bears S. 49° E. $\frac{7}{8}$ mile.

Adamant Shoal, about $\frac{3}{8}$ mile in extent, lies nearly in the middle of Shelburne Harbor; the actual dangers are confined to two rocky patches, the eastern of which, known as Adamant Rock, has 10 feet water, and the western, or Man-of-war Rock, distant 300 yards west, has only 4 feet water.

Middle Rock, with $2\frac{1}{4}$ fathoms on its shoalest part, lies east $\frac{5}{8}$ mile

from Surf Point, on which is a remarkable bowlder, and ½ mile from the nearest shore SW. of Sand Point.

Hart Point Rock, with only 9 feet, lies about 400 yards off Hart Point.

Hero Shoal, with 2¼ fathoms on it, lies on the western shore near the head of the harbor. A white house on an elevation NE. of the town of Shelburne on with Shelburne south church, leads 200 yards eastward of the shoal.

Directions.—On nearing McNutts Island steer along its eastern shore, which is steep-to, at a moderate offing, and when drawing near Middle Rock bring the NE. bluff of the island to bear S. 46° E., and steer N. 46° W. until abreast Surf Point, which can be passed within 200 yards, thence steer to pass in mid-channel between Sand Point and the land on the western shore. From this latter position, if desirous of passing east of Adamant Shoal, steer to the northward, being careful on approaching the shoal to keep Grey Island open of Surf Point Bowlder bearing S. 10° E., and after passing the danger select an anchorage as most convenient on the eastern side of the harbor S. 12° E.

If wishing to round the Adamant Shoal on its western side, and being in a mid-channel position abreast Sand Point, steer along the western shore with Surf Point Bowlder apparently just touching the SW. high-water line of McNutts Island bearing S. 23° E., and when Churchover church tower comes in line with the end of the Durphy Wharf alter course to N. 44° E., bearing in mind that the white house before alluded to open SE. of the Episcopal church tower bearing N. 22° E. clears Hart Point Rock, and all dangers on the western shore between Hart Point and the town of Shelburne.

Jordan River is a deep indentation with a general trend to the northward, and is upwards of 1¼ miles in breadth at its entrance. The place is easy of access and comparatively free from danger, but can not be deemed a good anchorage, in consequence of the heavy seas which run in during southerly gales.

Blue Gull Island, about ¼ mile in length, and 45 feet high, forms the western point of entrance to Jordan River. Between this island and Jordan Point there are numerous rocks, some of which uncover at low water.

Green Island, which is common to Green Harbor and Jordan River, is 70 feet high and ½ mile in length, and about the same distance from Paterson Point, the channel between carrying a depth of 15 feet water.

The Sisters are a cluster of rocks about ½ mile from the western shore. Two of the rocks uncover at half ebb, and generally show a break with much sea.

Directions.—Approaching Jordan River from seaward, bring the west end of Green Island to bear N. 17° W., and after passing it at a moderate offing, steer boldly up in mid-channel, by which the Sisters Rocks will be avoided, and anchor in about 3½ fathoms on the western

shore, with western head just open of the high-water line about Paterson Point bearing S. 40° E., and Jordan Point in line with the west tangent of Blue Gull Rock about S. 12° E.

Green Harbor.—None but the smallest description of vessels can find shelter from southerly and southeasterly gales, which send in a heavy rolling sea. Anchorage can be obtained with winds from west round by north to east.

Rugged Island Harbor derives its name from the rugged appearance of the coast in its immediate vicinity. Black Point, on the eastern side of the entrance, is 1½ miles distant from Ram Island in a west direction, and between this point and Western Head there are numerous ledges and sunken dangers, rendering the approaches to the harbor difficult and dangerous. This place is seldom resorted to, except by fishermen, although within the harbor the anchorage is good. During southerly gales the uneven rocky ground at the entrance causes the sea to break from side to side.

Buoy—An automatic whistle buoy, painted red, with the letter L in white on it, is moored with Gull Rock light-house bearing N. 62° W., distant 3½ miles, and eastern extreme of Ram Island north. From this buoy a N. 40° W. course leads nearly midway between Blow Breaker and the 4½-fathom patch southwestward of it, thence to the southern end of Cranberry Island, which can be approached with comparative safety, with the careful use of the lead in foggy weather.

Gull Rock is a small rocky ledge about 15 feet high off the entrance to Rugged Island Harbor.

Long Shoal, with 3¼ fathoms, lies with the highest part of Green Island in line with the outer end of Western Head bearing N. 50° W., and Gull Rock light-house N. 24° E. nearly a mile.

Bull Rock, the outer of two dangers off Western Head, has only 3 feet water, and its position is generally marked by a break. From it the western extremity of Western Head bears N. 7° E. 1¼ miles; and Gull Rock light-house N. 47° E. about 2 miles. Within Bull Rock, ¼ mile distant, is another detached shoal, having 10 feet, with deep water between and around the two.

Chain Ledges consist of a narrow broken ridge of rocks nearly a mile in length north and south; the highest part of the ledges stands about 10 feet above high water, and on the southern extreme is a small rock which uncovers at low water, and generally shows a break.

From this latter rock Gull light-house bears S. 23° E. over ¾ mile, and the extreme of Western Head S. 47° W.

The northern end of the ledges terminates in a rock with only 3 feet water, at the distance of a good ¼ mile from the highest part of the ledge; and between it and the south end of some rocky ledges south of Cranberry Island and Sam Rock, detached with 10 feet water; but though deep water channels exist on either side of it they are too narrow to be available for navigation except by small coasting vessels.

Middle Ground is an extensive shallow spit studded with rocks, several of which uncover at low-water springs; the shoal extends from the west side of Gooseberry Island, more than half way across to Cranberry Island on the western side of the entrance to Rugged Island Harbor. A yellow house on the eastern shore of the harbor open westward of Shag Rock bearing N. 19° E. leads westward of the Middle Ground.

From the Middle Ground to the northward a bank of 3 fathoms extends from the eastern shore nearly across the harbor, leaving only a narrow channel about 200 yards wide, with 3¼ fathoms, abreast of Carter Island, thus rendering it unadvisable to attempt the anchorage within with vessels drawing more than 15 feet.

Whale Rock is the highest part of an extensive rocky shoal northeast of and almost joining Gull Rock. The shoal is nearly a mile in length north and south between the 5-fathom lines, but the most dangerous part is the southern, where, in addition to the Whale Rock, which uncovers at low water and generally shows a break, are several sunken dangers, the southernmost of which is Kelp Shoal with only 3 feet water.

Trinidad Rock is a small detached patch, with 10 feet water, near the north end of the shoal of which Whale Rock is a part, and from it Gull Rock light-house bears S. 4° W. $\frac{9}{10}$ mile.

South Ledge is a small detached shoal with 3 fathoms water. From it Gull Rock lighthouse bears N. 23° W., the nearest point of the rock being ½ mile distant, and the highest part of Blue Gull Island on with the outer end of Western Head bearing N. 77° W.

Eastern Bull, known also as Blow Breaker, is a small rocky patch with only 4 feet water. From it the north end of Ram Island appears touching the south end of Black Rock bearing N. 52° E., and a white house near Cumming Point is in line with the west end of Gooseberry Island N. 26° W.

Black Point Rock uncovers at low water, and is the outer and highest point of a spit extending from Black Point in a southerly direction. The white house near Cumming Point in line with the west end of Gooseberry Island bearing N. 26° W. leads westward of Black Point Rock, and Black Rock its apparent length open north of Ram Island leads between the rock and Eastern Bull.

Tides.—The tidal current along shore between Ram Island and Baccaro Point is governed by the Bay of Fundy tide, the flood setting to the westward and the ebb to the eastward. The velocity increases in proceeding westward from Ram Island, where the strength varies from half to one knot an hour.

There is also a current off this shore, and though the general trend is to the westward, its strength and direction are greatly influenced by winds. After easterly gales the current increases its westerly set, and it is retarded in proportion by westerly gales.

From the Westward.—After passing Western Head at a moderate distance, bring it in line with Cape Roseway lighthouse and continue with these marks in line until Gull Rock lighthouse bears S. 46° E., when steer N. 7° E. for the west side of Clam Island. Rounding Clam Island at about 200 yards distance, anchor in 2¾ fathoms, mud, with the west end of Clam Island bearing S. 4° W., where the holding ground is good and the anchorage safe.

There is also fair anchorage on the east side of the bay between Shag Rock and a position ½ mile south of Clam Island in 3½ to 4 fathoms. Care should be taken on passing Shag Rock to avoid a shoal with only 6 feet on it, about 200 yards to the NW.

The anchorage within Locke Island is only adapted for vessels of small draft, but it can not be deemed secure, as the holding ground is bad.

Directions from the Eastward.—Vessels with a leading wind can pass between Emulous and Farm Ledges in 5 fathoms by bringing the Gull Rock light-house in line with the outer end of Western Head bearing S. 83° W.; or outside Farm Ledge by bringing Government Point at the entrance of Shelburne Harbor in line with the outer end of Western Head bearing west.

With either of the above marks in line proceed to the westward until the white house near Cumming Point is in line with the west end of Gooseberry Island bearing N. 27° W. (the marks for leading over the Eastern Bull), thence steer for the south end of Cranberry Island, and when the yellow house is in line with Shag Island N. 15° E. steer for the west side of Clam Island about N. 7° E., and proceed as before directed.

From Seaward.—Bring Gull Rock lighthouse to bear N. 4° E., and on approaching it pass about ¼ mile west of the rock, and when abreast the lighthouses steer N. 7° E. until approaching Cranberry Island. When a yellow house is in line with Shag Rock, proceed as before directed.

Ram Island, a long ⅓ mile in length, with an elevation of 21 feet, lies off the pitch of Hemeon Head, from which it is distant ½ mile, but the channel with 3½ fathoms is narrowed to the breadth of 300 yards by shoal spits extending from the island and main shores. A dangerous rocky shoal extends in a southerly direction from the south end of Ram Island for the distance of a mile, terminating in Emulous Ledge which uncovers at low water.

Farm Ledge is a small detached shoal, with 3¾ fathoms water, ½ mile outside Emulous Ledge, the channel between having depths of 5 to 7 fathoms.

From the ledge the tangents of Black Rock and Ram Island appear nearly touching bearing N. 15° E. and the extremity of Western Head just shut in by Gull Rock. There is also a small patch with 5 fathoms water at the distance of ½ mile S. 10° W. from Farm Ledge.

Black Rock, about 10 feet above high water, is divided in two, and

at a little distance resembles two rocks; the rock is about ¼ mile from the shore of Hemeon Head, with a narrow deep-water channel between.

Bantam Rock, of small extent, uncovers at low water, and lies S. 16° W. ⅞ mile from Harding Point; it is the highest point of a cluster of rocky patches which occupy a space ⅞ mile in length north and south. From Bastard Rock, the southeasternmost of the group, with 3¼ fathoms water, the summit of the dark hill of Richardson Head is seen over the high-water tangent within Green Island, bearing N. 30° E.

Although there is a deep-water channel between Bantam Rock and the entrance points of Sable River, large vessels should keep outside these patches.

Sable River.—At the distance of 1¾ miles SW. of Green Island is Harding Point at the eastern entrance of Sable River; but as a bar with only 3 feet water (which breaks heavily in southerly gales) extends across the river entrance, none but very small vessels in charge of men possessing local knowledge can make the navigation of this river available.

Green Island, about 200 yards in extent and 45 feet high, lies about ½ mile from the nearest shore, the passage between being rocky, shallow, and uneven.

Port Hebert.—The entrance to the port may be easily recognized by the dark hill of Richardson Head, thickly wooded and about 130 feet high, with a very abrupt fall towards the east. Within Richardson Head, and stretching across the river, is a bar with only 2 fathoms water, which breaks in heavy weather.

Hebert Rocks, which uncover at low water about ¼ mile from the shore, form the outer part of a spit extending from the western point of entrance to Port Hebert.

Tides.—The tidal current through the channel changes a little after high and low water by the shore, and during springs attains a velocity of one knot per hour.

Directions.—Port Hebert affords safe anchorage, but only to small vessels on account of the bar and narrow channel. Strangers should never attempt the port without a leading wind, and even then the services of a pilot should be procured.

Bring Shingle Point in line with a white house bearing N. 1° W., and when approaching Shingle Point pass it about 100 yards, and anchor in 4 fathoms water off a water course on the south end of a shingle beach north of Shingle Point, distant ⅓ mile.

Port Jolie, an indentation 5 miles deep, is only available for small vessels, and even for those there is no safe anchorage; the so-called port should be avoided by strangers.

Little Hope Shoal, distant 2 miles S. 61° W. from Little Hope lighthouse, is ⅓ mile long between the 5-fathom lines, and has on its shoalest point only 10 feet water, from which Lesser Hope Rock, off the western point of Port Jolie, is in line with Thrum Point on the eastern side of

Port Ebert bearing S. 82° W., and the eastern tangent of Jolie Point N. 7° W., the distance off the pitch of the point being 1¼ miles.

Little Hope Islet, 15 feet high, is composed of small bowlders, thrown up by the sea, on a rocky foundation, and from it in a northerly direction shoal water extends ⅛ mile, whilst on the south side the 5-fathom line is nearly ½ mile distant from the shore of the islet.

A line S. 35° W. from the south point of Mouton Island apparently touches Mouton Head and Jolie Point on the mainland. The distance between the two latter points is nearly 3¾ miles, with Little Jolie and Cadden bays intervening; Black Point, off which shoal water extends about ⅛ mile, being common to both.

Port Mouton.—There are two channels leading to the anchorage; the one north of Mouton Island is available for large vessels, but the western channel is narrow and difficult, and not adapted for vessels drawing more than 15 feet water. The principal occupation of the settlers along the shores of the port is fishing.

Mouton Island, 110 feet high, is 2 miles long north and south, and ¾ mile broad. From its north point a spit extends nearly a mile in a NW. direction, on the outer extremity of which there is a shoal with 2¾ fathoms; between this shoal and a similar depth near the island there is a channel over the spit with 3¼ fathoms.

There is also a detached shoal with 3¾ fathoms water a short ½ mile N. 24° E. from the NE. point of Spectacle Island.

Lifeboat.—There is a lifeboat at the northwestern end of the island.

South Rock lies 400 yards off the south point of Mouton Island, and uncovers at low water.

Bull Rock, 4 feet above high water, lies 300 yards off Bull Point on the mainland within Mouton Island, and from its position is useful as a guide for the narrows.

Middle Rock, with 7 feet water, occupies a central position in the narrows of the western channel, between Bull Rock and the rocks extending in a southerly direction from Jacket Island.

Devastation Shoal has only 2 fathoms water on its northern end, which lies in an easterly direction ¾ mile from the south point of Mouton Island. There is a deep-water channel between the island and the shoal, and Round Rock bearing N. 4° E. will lead through the center in 5 fathoms.

Brazil Rocks form a cluster about ¼ mile in length; several of the rocks uncover, but one known as the Round Rock is always above water, and is consequently of great service in entering the port by the eastern channel. From the Round Rock the north tangent of Mouton Island bears S. 72° W., and it is distant from Halibut Head about a mile, the channel between being deep and free from danger. A detached rock, with only 3 feet water, lies at the distance of 800 yards in a SE. direction from the Round Rock.

White Point Rock, with 2¾ fathoms water, is of small extent with

deep water close-to; from it White Point bears N. 33° W. distant 1¼ miles, and the highest Brazil Rock in line with Halibut Head S. 62° W.

White Point Shoal, with 6 fathoms water, has 10 and 13 fathoms close around. This shoal should be avoided by large vessels because the rock rises so abruptly that the lead may possibly have missed the highest point.

Jacket Island, within Mouton Island, is steep-to on its northern and western sides, but to the southward the low-water line runs off about 300 yards in broken rocks; between Jacket and Mouton Islands the ground is foul.

Spectacle Island.—Between the island and the main shore are numerous rocks, and it is also connected by a shallow rocky spit with Massacre Island a long ½ mile to the SE.

Spectacle Rock, 3 feet above high water, can always be seen; it lies 250 yards from the point of Spectacle Island, with a deep-water channel between.

Western Channel.—When between Mouton Head and the south point of Mouton Island bring Bull Rock in line with the east tangent of Spectacle Island bearing N. 25° W., and continue with these marks until approaching the rock, which should be passed on its eastern side about 150 yards distant, with the ship's head towards Spectacle Rock, and this course should be continued until the south end of Jacket Island bears N. 88° E., when anchorage in 7 fathoms, mud, may be obtained north of Bull Point by steering S. 88° W., with Bull Rock in line with the south point of Mouton Island, and Spectacle Rock just open west of Massacre Island; at this anchorage the holding ground is good, but a disagreeable swell is experienced during easterly gales.

Directions.—Eastern Channel.—Give White Point a berth of about ½ mile and proceed to the westward, taking care to avoid shutting in the eastern point of Mouton Island with Halibut Head, until the white sand cliffs south of the anchorage open out north of Spectacle Island bearing S. 30° W., in order to clear the shoal patch on the outer end of Mouton Spit and the adjoining patch with 3¾ fathoms.

With the above marks on steer in about S. 36° W., and anchor in 6 or 7 fathoms, mud, with White Point just shut in by the north end of Spectacle Island, and Massacre Island in line with the south end of Spectacle Island.

Coming from seaward and wishing to pass between Mouton Island and Brazil Rock, bring Halibut Head in line with the north tangent of Spectacle Island bearing N. 85° W., and proceed with these marks on until Round Rock bears N. 14° E., when alter course to N. 62° W., and proceed as before directed to the anchorage.

Coast.—From White Point to Western Head the coast trends about ENE. with Black Point and Gull Bay and Island in between.

Liverpool Bay is dangerous—especially during the fall of the year and winter months—for all vessels excepting those of a sufficiently small

draft to anchor in Herring Cove. From Eastern Head to the westward for the distance of a mile the shore is foul, and an offing of ¼ mile should be maintained.

The town of Liverpool, at the head of the bay, is hidden from view on approaching from seaward. It carries on in connection with Milltown an extensive trade with Halifax, the United States, and West Indies. The exports are principally lumber, cordwood, fish, and farm produce.

Shipbuilding is carried on to a small extent, and a considerable amount of tonnage belongs to the port; there is a foundry where small repairs can be effected. Provisions and water can always be procured.

The United States is represented by an agent.

Automatic Buoy.—An automatic whistling buoy painted black and white in vertical stripes, is moored, in 20 fathoms water, in the fairway to Liverpool Bay; with Coffin Island light-house bearing N. 17° W., distant 1¾ miles; Fort Point light-house N. 68° W., and Western Head S. 62° W., 2¼ miles.

Fort Point Ledge extends off Fort Point in a NE. direction; the outer end of the ledge is distant from the light-house 200 yards, and is marked by a buoy on its NE. end in 2 fathoms water.

Directions.—In proceeding up Liverpool Bay a mid-channel course should, if possible, be preserved. The anchorage mark in Herring Cove is Moose Point in line with the SE. point of the cove, in about 2 fathoms, mud; the holding ground is good, but a considerable sea rolls in during heavy gales between south and east.

Safe anchorage can be obtained at the entrance of the river abreast the town, but it is only adapted for small vessels, as a bar with 4 feet water extends across the entrance; the services of a local pilot are necessary.

Coffins Island, thickly wooded, lies on the north side of Liverpool Bay. The northern end of the island is distant ⅜ mile from the mainland, and is connected by a shallow bar on which in some places the depth is only 3 feet.

Port Metway.—The eastern side of the entrance consists of a series of small islands extending from the mainland to a distance of about 3 miles in a southerly direction, and terminating in Frying-pan Islet, a small rocky islet 10 feet above high water.

In Port Metway safe anchorage is to be obtained, but in the channel leading thereto are several rocks, which render it difficult of access to strangers, who should obtain the services of a local pilot. Above the town, to the NW., are several mills where lumber is sawn; this and fish form the principal articles of export.

Metway light-house stands on the shore of Metway Head, a dark wooded headland forming the western point of entrance into Port Metway.

Southwest Breaker is a dangerous patch with only 6 feet water, on

the south end of a rocky shoal off the entrance of Port Metway. Between it and Frying-pan Island there is a deep-water channel nearly ½ mile broad between the 5-fathom lines. A red bell buoy, marked "SW. Breaker," in black letters, is moored ¼ mile S. 25° W. of it.

Stone Horse is a detached rock which uncovers at low-water springs, and from it Metway light-house appears, almost touching the south tangent of Frying-pan Island; from the latter the rock is distant about ⅛ mile.

Rugged Rock is a detached patch lying off the extremity of a spit extending from the shore a little south of Metway Head. This rock has only 7 feet water, and is marked by a breaker in heavy weather.

Stony Ridge, consisting of bowlders, with 1½ fathoms on its shoalest part, is distant about 200 yards from the nearest high-water line north of the light-house.

Middle Island Rock, with 9 feet water, breaks in heavy weather; this rock lies on the eastern side of the channel abreast Neils Point.

Middle Ledge is a shoal patch about ⅛ of a mile in length and having on it several rocks which uncover at low water.

Nautilus Rock is on the outer end of a large flat extending from the shore between Neils Point and the town a distance of 1½ miles in a NW. direction. The flat extends upwards of ½ mile from the shore, and is connected by a narrow neck with the shoal water on the northern part of the bay.

The south tangent of Bass Island apparently touching the outer wharf of the town bearing S. 78° W. leads over the neck in about 15 feet water; and Bass Island north end apparently touching the south end of Foster Island S. 75° W. just clears the southern edge of the bank extending from Foster Island in an easterly direction.

Directions.—Vessels entering Port Metway should leave the bell buoy off SW. Breaker to the eastward. From it a course N. 17° W. will lead up to the iron-can buoy off the flats northward of Neils Point.

When the northern wharf of the town bears west, bring Dry Ledge to bear N. 19° W., in order to keep well clear of Middle Ledge, and when Bass Island opens out north of the outer wharf of the town bearing S. 79° W., alter course to bring Bass Island in the middle of the opening between the outer wharf before mentioned and the south side of Foster Island; with this mark on proceed, and when the north end of Toby Island is in line with Neils Point bearing S. 60° E. anchor in 5 fathoms, mud.

If from the eastward, and wishing to pass between the Stone Horse and Southwest Breaker, open Metway lighthouse well to the southward of Frying-pan Island, and when the lighthouse bears N. 68° W. steer for it until the bell buoy bears S. 17° E. and proceed as previously directed.

Green Bay, is about 3½ miles in depth, with gradual soundings and sandy bottom. The bay is not a safe anchorage, for not only is it ex-

posed to southerly winds, but is also objectionable during easterly gales, which generally draw round by way of south.

Anchorage.—Small vessels will find secure anchorage within the entrance of Crooked Island Channel, to enter which bring the wharf on Johnsons Island in the middle of the opening bearing N. 53° E., and steer on this course in the middle of the channel. After passing the rocky entrance keep between the mud banks on either side, which may be distinguished by the grass which grows on the mud flats, and anchor when about 200 yards from the wharf.

Green Point Rock, a small isolated patch having 10 feet water on it, lies ⅛ mile from Green Point in a N. 78° W. direction.

Green Ledge, ¼ mile in extent, has a small portion which uncovers at the last quarter ebb; from this part Long Point bears N. 20° W. ⅞ mile, and Green Point S. 76° E. 1½ miles. Entering Green Bay east of the Half-way Rock and Green Ledge, on passing Indian Island, avoid bringing the SW. end of Indian Island to bear eastward of S. 28° E., or southward of S. 12° E. in order to clear Green Point Rock.

Half-way Rock, so called from its being nearly midway between Indian Island and Long Point, on the western side of Green Bay, has 2¾ fathoms on it, and lies with Cape La Have a little open south of Green Point, the latter bearing N. 81° E. 1¼ miles distant, and the SW. end of Indian Island S. 42° E.

Indian Island, about ½ mile in length, is distant one mile southward from Green Point, with a clear, deep channel between, ¾ mile wide.

Bantam Shoal, a small rocky patch with only 3 feet water, lies off the center of Bantam Bay, and from it Green Point bears N. 87° W. ⅞ mile.

La Have River.—From West Ironbound Island on the east to Cape La Have, an abrupt cliff with a reddish face, 95 feet high, forming the western point of the river entrance, the distance is 4 miles. From its entrance the river takes a general trend to the northward, and is navigable for small vessels as far as Bridgewater, a settlement on the right bank of the river, nearly 15 miles from West Ironbound Island.

On the inside shore of Cape La Have are numerous islets, which by retaining the débris of the river are now connected with each other and the main shore by a series of shallow banks, with occasional deep-water holes and channels. A bell buoy is moored in 22 fathoms, with West Ironbound Island light-house bearing N. 2° E., distance 2⅛ miles, and Moshers Island light-house N. 32° W., distant 3 miles.

Black Rock, small in extent and 5 feet above high water, lies S. 69° E. one mile from the pitch of Cape La Have. Small vessels may approach this rock tolerably near on all sides, but large vessels should not approach its south side nearer than ½ mile, on account of two small shoals with 4½ and 4¾ fathoms respectively.

The east tangents of Point Enragé and West Ironbound Island in line bearing N. 28° E. leads southward and eastward of these shoals.

Cape Rock is small, with 3¼ fathoms, ¼ mile from Cape La Have in a southerly direction, with deep water all round.

Moshers Island, 135 feet high, is 1½ miles long east and west and ½ mile broad, and is connected with East Spectacle Island at ½ mile north of it by a bar with general depths of 2½ fathoms.

Shag Rock, which covers at high water, lies N. 69° E. ¼ mile from the north end of West Ironbound Island.

Ironbound Breaker is a small rock on the outer extremity of a spit extending ¼ mile from the west point of West Ironbound Island.

French Rock, with 7 feet water, and 2 to 3 fathoms close around, lies on the bar between West Spectacle and Moshers Islands; within this bar there is a safe anchorage in 3 to 4 fathoms, mud. West Ironbound Island lighthouse, just seen clear of the NE. end of Moshers Island, leads southward of French Rock.

Moshers Ledge, lying nearly midway between the west end of Moshers Island and West Spectacle Island, has only one foot water.

Cockawee Shoal, ½ mile in length, lies between West Spectacle Island and the western shore of La Have River, and has only 4 feet water on its shoalest part. The SW. end of West Ironbound Island, apparently touching the NE. end of East Spectacle Island bearing S. 69° E. leads SW.; the house in the sandy cove on the NE. side of Moshers Island open of East Spectacle Island bearing S. 37° E. leads eastward; and the Episcopal church bearing N. 9° W. leads westward of Cockawee Shoal.

Oxners Rock, which dries at low water, is the highest part of a shoal extending off Oxners Head for some distance along shore.

Bull Rock.—From the shore near the Episcopal church there extends in a southeasterly direction a rocky shoal, the highest part of which, known as Bull Rock, is just awash at high-water extraordinary springs, and is therefore generally visible. About 200 yards from Bull Rock, in a SE. direction, there is a shoal with only one foot water; and another with 3 feet water lies nearly 200 yards from Bull Rock, in a northeasterly direction. Krout Point in line with middle of Parkes Island N. 5° E. leads eastward of the shoal.

Directions.—Approaching La Have River, two passages are available, one on each side of West Ironbound Island; the only danger to be avoided on passing outside the island is Ironbound Breaker.

The passage inside West Ironbound Island is narrow; Shag Rock is nearly always seen, but should it be covered the SE. tangent of Cross Island in line with Point Enragé bearing N. 48° E. will clear the Shag Rock and lead through between the island and Gaff Point.

There are several available anchorages at the entrance of and within La Have River. With westerly winds vessels may anchor in safety along the north shore of Moshers Island outside the French Rock, which

may be avoided by not shutting in Krout Point with the east point of East Spectacle Island.

With easterly winds the anchorage inside the French Rock is preferable; but this position is not attainable at low water by vessels drawing more than 14 feet.

Before the east end of East Spectacle Island bears N. 9° W. West Ironbound light-house should be brought just open of the NE. end of Moshers Island bearing S. 73° E., and continuing to the NW. with these objects on, anchor in 3½ or 4 fathoms, mud, with Fort Point and the east end of West Spectacle Island in line bearing N. 9° W.

To pass north of French Rock proceed with the SW. tangents of the two Spectacle Islands in line until the east end of the eastern island bears N. 14° E., when steer S. 81° W. and anchor as before directed.

Vessels making for the anchorage NW. of the Spectacle Islands should pass 400 yards from the north shores of those islands, and anchor in about 3 fathoms, mud, with Bull Rock midway between Fort and Krout Points, and the north end of West Spectacle Island on with the center of the eastern island.

The safest anchorage about La Have is within the river entrance to the NW. of Fort Point, the deepest channel to which is on the west side of Cockawee Shoal, though that to the eastward is more direct and generally used; the latter has sufficient depth at low water for vessels of 13 feet draft.

Western Channel.—Pass the Spectacle Islands about ¼ mile distant from their northern shores, and when approaching the main shore keep the SW. tangent of West Ironbound Island in line with the east point of Spectacle Island, until the Episcopal church bears N. 9° W., when steer for the church until Krout Point opens west of Bull Rock about one-third the distance between the rock and the main shore, and then steer N. 25° E. When the Episcopal church bears S. 48° W. alter course to N. 48° E., to avoid the south end of Bull Spit; and when Krout Point bears N. 2° E. steer for it until approaching the point, and then alter course to pass midway between Krout and Fort Points.

After passing these points, continue on a northerly course until the spire of the church in Ritcy Cove appears nearly to touch the south end of Parkes Island, when alter course to N. 65° W., and when the points of the entrance close bearing S. 42° E. good anchorage will be found in 5½ fathoms, mud. Water may be obtained from a stream opposite this anchorage on the SW. shore.

To pass eastward of Cockawee Shoal, avoid shutting in the house in Sandy Cove on the NE. side of Moshers Island, and when Krout Point bears N. 2° E. steer for it, and on approaching the point proceed to the anchorage as before directed.

West Ironbound Island.—West Ironbound Island, nearly ⅔ mile in length, with an elevation of 103 feet, may be said to form the eastern entrance point of La Have River.

Rose Bay is open to the eastward 1½ miles across, between Ovens and Rose Points. Shelter may be obtained in this bay from northerly or westerly winds, but is much too exposed to afford safe anchorage, except of a temporary nature. Similar remarks apply to Hartland and Kings Bays, SW. of Rose Bay, for both are exposed and unsafe.

Whistling Buoy.—A whistling buoy painted red and black in alternate horizontal stripes has been established off the western entrance to Lunenburg Bay, with Battery Point light-house N. 42° W. distant 6½ miles.

Lunenburg Bay, about 5 miles in depth and 2¼ miles broad between the entrance points, is open to the SE., but the force of gales from that quarter is much lessened by the position of Cross Island, which acts as a breakwater. At the northern angle of the bay is the town of Lunenburg. Nearly all the population are the descendants of German families.

The principal exports are fish, cordwood, lumber, and the produce of some good farms in the neighborhood of the town.

The United States is represented by an agent.

Cross Island, 94 feet high, thickly wooded, lies immediately off the entrance of Lunenburg Bay, and is the outer object making the western approach to Mahone Bay.

Pilots frequent the island.

Hounds Ledge, consisting of parallel ridges of rock nearly a mile in length east and west, lies off the north shore of Cross Island; the eastern end of the ledge uncovers at low water. Green Island south point apparently touching the north end of Big Duck Island bearing N. 63° E. leads northward of this danger.

Ovens Point Rocks, off the point of that name, on the west side of Lunenburg Bay, generally uncover at low water, and always break during strong winds from seaward.

East Point Rock is a small isolated patch with 7 feet water, ¼ mile from the high land of the nearest shore; from it East Point Ledge bears NE. nearly ¼ mile.

Sculpin Shoal consists of a series of rocky ridges ½ mile in length S. 60° W. and N. 60° E., and has only 3 feet water on its shoalest part near the western end, which lies midway between Blue Rock Island and the cliffs on the north side of Ovens Point, and from it the large church tower of Lunenburg is seen through the gap east of Battery Point bearing N. 45° W.

Outer Middle Rock has 2½ fathoms on its shoalest part, from which the tangents of Ovens and Rose Points are in line bearing S. 33° E., and Big Duck Island its apparent breadth open south of East Point Ledge.

Inner Middle Rock, of small extent, has 2¼ fathoms on it, and lies with Battery Point bearing N. 31° W., and Big Duck Island south point on with East Point Ledge.

Shingles is a stony ridge ½ mile in length NW. and SE., the northern end of which uncovers at half ebb, and is distant from Mosers Head ½ mile.

Long Shoal is a rocky patch ⅓ mile in length, having as little as 4 feet on its shoalest part, from which Battery Point bears north nearly ½ mile.

Moreau Point Rock is a rocky split extending in a SE. direction from the point, and having only 3 feet of water on its shoalest part, which is distant about 300 yards, from the the nearest high-water shore.

Directions.—Lunenburg Harbor is safe with all winds, but is not adapted for vessels drawing more than 15 feet water.

If from the southward, Rose Point, which is steep to, may be passed at a moderate offing. From a position ½ mile east of Rose Point steer N. 15° W. until Moreau and Battery Points are apparently just touching bearing N. 51° W., and proceed with these objects in line west of Sculpin and east of Outer and Inner Middle Rocks.

On approaching the lighthouse, keep to the westward until the lone tree is seen over Moreau Point, bearing N. 43° W., which will lead east of Long Shoals and clear of the split off Battery Point, after which steer for the town and anchor in 2¾ fathoms, mud, with lighthouse bearing S. 42° E.

Approaching from the eastward, north of Cross Island, Lunenburg lighthouse bearing N. 71° W., will clear Hounds Ledge and East Point Rock; and when the south end of Big Duck Island appears to touch the southern tangent of East Point, steer with this mark on astern until Moreau and Battery Points are apparently just touching, when steer for them until Ovens and Rose Points are in line, thence steer to the westward until a remarkable isolated tree on the bare high land westward of the town is seen over the eastern tangent of Moreau Point bearing N. 43° W., and proceed as before directed.

Mahone Bay is separated from St. Margaret Bay by Aspatagoen Peninsula, the high lands of which may be seen from a distance of more than 20 miles in the offing.

The eastern shore of the bay is steep-to and comparatively free from dangers, but on the western side rocks and sunken shoals are almost innumerable. Between the east point of Lunenburg and Chockle-cap Islet to the northward are a series of parallel ridges lying east and west, extending in some places considerably beyond the general direction of the shore, and forming a confused mass of rocks, rendering any intelligible description impossible.

As a detailed description of all the dangers in Mahone Bay would be impracticable, it is intended to allude only to those affecting the navigation of the principal channels, commencing with the islets marking the approaches, and from thence up the bay.

Heckman Anchorage, to the southward of Hobson Nose, is perfectly safe with a good depth of water over mud, but the channels lead-

ing to it, though deep, are rendered tortuous by several shoals which lay between Hobson Nose and the anchorage; and as no direct leading marks can be given, a stranger should not attempt the anchorage without a pilot.

Princes Inlet, on the south side of Harmon Island, though small in extent, affords safe anchorage in 6 or 7 fathoms, mud. From an offing of about ⅓ mile north of Hobson Nose, steer for the south point of Bockman Island; this course will clear the spits off Bluff Head and Sandy Cove. After passing the latter, steer to pass midway between Bockman Island and the main shore, and on nearing Little Harmon Island borrow on the main shore, in order to avoid shoal water off the latter island, and anchor between Harmon Island and the main.

Big Duck Island, about ⅛ mile in length and 45 feet high, lies 2 miles NE. from the east end of Cross Island; the 5-fathom line around this island is about ¼ mile off shore.

Middle Ledge is composed of parallel rocky ridges, and has only 3 feet on its shoalest spot. Cross Island light-house seen open east of Big Duck Island leads east; and the light-house in line with the west end of the island S. 21° W. ½ S. leads west of Middle Ledge. There are no good cross-clearing marks, but a vessel will be northward of the danger with the south point of Green Island bearing S. 88° E.

Hobson Nose is a grass-covered earthy mound, 30 feet above the sea, on a gravelly spit which dries a good ⅓ mile at low water.

Mahone Harbor, on the west side of Mahone Bay, affords secure and well-sheltered anchorage in about 6 fathoms water, but, like Martins River anchorage, is difficult of access in consequence of the numerous off-lying dangers.

The entrance to the channel leading to Mahone Harbor and Princes Inlet lies between Hobson Nose on the south and Haddock Shoal on the north, the latter being the southern rise of the shoal ground extending from Refuse to Mason Island.

Martins River Anchorage, on the west side of Mahone Bay, is safe and commodious, with water sufficient to accommodate vessels of large draft, but the approaches being narrow and circuitous render the place difficult of access, and on no account should strangers attempt to enter this anchorage without the assistance of local knowledge.

Fogs.—During the fogs which frequently prevail on this coast during July and August when the wind is to the westward of south, the SW. side of Mahone Bay is generally clear.

Directions.—Vessels being off Hobson Nose, and bound for Mahone Harbor, should bring the Grassy Islet of Hobson Nose to bear S. 71° E., and by steering N. 71° W. will pass south of the Middle Patch and north of Bockman Shoal and Covey Ledge.

When the east point of Covey Island appears to touch the west end of Bockman Island, alter course to S. 85° W., until approaching Westhaver Island, when the channel south of Westhaver Island or north of

Ham Island must be decided on, but if without local knowledge the former channel is recommended as being the less circuitous of the two. Westhaver Island being steep-to on its west side may be approached close-to, and a good anchorage obtained in 5 or 6 fathoms, mud, inside Ham Island to the NW. Good anchorage may also be obtained between Trappean Island and the east end of Harmon Island in 7 fathoms, mud, with the southern point of Refuse Island just shut in with the north end of Trappean Island.

Green Island, about $\frac{1}{3}$ mile in length and 40 feet high, is distant upwards of 5 miles from New Harbor Point, and lies with East Ironbound Island lighthouse bearing N. 24° W. $3\frac{1}{2}$ miles, and Cross Island lighthouse S. 50° W. $6\frac{3}{4}$ miles.

Northeast Shoal, so called in consequence of its relative position to Green Island, from which it bears N. 19° E. $1\frac{3}{4}$ miles, is about $\frac{1}{4}$ mile in extent, and from its shallowest part (near the center), with only 3 feet water, the east end of Little Tancook Island is just seen east of East Ironbound Island, the nearest part of the latter being more than 2 miles distant bearing N. 48° W., and the north extremity of Cross Island just in sight north of Big Duck Island.

Flat Island.—Flat Island, about $\frac{2}{3}$ mile in length, is somewhat remarkable in shape; on the north end is a narrow eminence 40 feet high, whilst the remainder of the island is very low.

East Ironbound Island.—East Ironbound Island is about $\frac{7}{8}$ mile in length and attains an elevation of 60 feet; it is clear on all sides at the distance of $\frac{1}{4}$ mile off shore.

Great Tancook Island is about 2 miles in length and 115 feet high, with an indentation on its eastern side.

West Shoals, three in number, lie on the west side of Great Tancook Island. The southernmost has $2\frac{1}{4}$ fathoms on its shoalest part, and deep water between it and the island shore. The north end of East Ironbound Island in line with the south end of Great Tancook Island bearing N. 85° E. leads southward of this shoal.

Middle Shoal, detached and nearly circular in form, is $\frac{1}{3}$ mile in diameter, with less than one foot water on its shoalest part, which lies $\frac{1}{3}$ mile S. 87° W. from the elbow of the shingle beach on the west side of Great Tancook Island.

Star Island Ledges.—Star Island, small and low, lies about $\frac{1}{3}$ mile off the end of Great Tancook Island, and may be considered the westernmost of three ledges about the same distance offshore.

Little Tancook Island, $\frac{3}{4}$ mile in length and 80 feet high, occupies a nearly central position between Great Tancook Island and Indian Point at the SW. extremity of Aspatagoen Peninsula. There are available channels on either side of the island, that on the western side being the more direct of the two, excepting for vessels of moderate draft.

SE. Shoals consist of a cluster of detached shoals, over which the depths vary from $2\frac{3}{4}$ to 5 fathoms; the shoalest, with $2\frac{3}{4}$ fathoms, lies

with the south point of Little Tancook Island bearing N. 51° W. about ½ mile distant, and Grassy Island S. 45° W. nearly 1½ miles. From this danger the center of Green Island is in line with the west end of East Ironbound Island bearing S. 32° E.

Bull Rock is a small rocky ridge, the highest part of which uncovers at half ebb. It bears S. 65° W. one mile from the SW. end of Flat Island, the channel between being clear, and S. 3° E. 1⅞ miles from the SE. point of Great Tancook Island.

The north end of East Ironbound Island seen open north of Flat Island leads northward; East Ironbound lighthouse open south of Flat Island leads southward; and Little Duck Island apparently touching the west end of Cross Island bearing S. 14° W. leads westward of Bull Rock. The deep-water passage on the west side of Bull Rock is the main channel into Mahone Bay, and is about 2 miles across.

Refuse Island.—This island and adjacent shoals lie on the western side of the main channel into Mahone Bay, opposite Great Tancook Island, and with the west shoals of the latter island the navigable channel is narrowed to the breadth of one mile.

East Shoal is small and rocky and deep water all round; from this shoal the high earth cliff on the SE. point of Refuse Island bears S. 66° W. ¾ mile.

Within East Shoal (with 4 fathoms on it) is a spit extending from the NE. point of Refuse Island in an easterly direction nearly ½ mile; there are only 2¾ fathoms on this spit, more than ⅛ mile from the high-water line of Refuse Island.

South Shoal.—From its outer and southern end, with 3 fathoms, the high cliff of Refuse Island (already referred to) bears N 6° E. ⅔ mile.

Mason Spit is a stony ridge off the SE. end of Mason Island ⅔ mile in length; from it Haddock Shoal, with 3 fathoms, lies S. 35° E. about ½ mile.

Coachman Ledge is ½ mile long north and south between the 5-fathom lines; its highest part uncovers shortly after half ebb, and at low water it shows about 100 yards above water. The center of this spot lies with Star Island tree bearing S. 14° W. nearly 2 miles distant.

SW. Coachman, a small patch with 4½ fathoms on it, lies with that part of Coachman Ledge which dries bearing N. 20° E. rather more than ⅔ mile.

NE. Coachman is another small patch with 4½ fathoms water, from which that part of Coachman Ledge which dries bears S. 11° W. upwards of ¾ mile.

Middle Shoal is nearly ¼ mile in length, having on its shoalest part 3 fathoms water; from it the NE. point of East Ironbound Island is apparently just touching the west end of Little Tancook Island bearing S. 59° E., and the east end of Snake Island N. 30° E.

Quaker Shoal, about 400 yards in length, has 4 fathoms on its shoalest part, from which the single tree on the east end of Quaker Island

bears N. 4° E. a little more than a mile, and Round Island Nubble S. 81° W.

Birch Shoal, 400 yards in length, has only 2½ fathoms on it, from whence the south point of Birch Island bears N. 3° E., 800 yards distant.

Lynch Shoal has only 9 feet water on it, from whence the north end of Clay Island is apparently just touching the southern cliffy point of Quaker Island, and the south point of Lynch Island bearing N. 56° E. nearly ½ mile.

Blandford Shoal is a small detached 4-fathom patch lying S. 64° W., 800 yards from Blandford Head.

Blandford Head, which is steep-to, lies on the south side of Shoal Cove where, as the name implies, the water is shoal. From Coachman Head, on the north side of the cove, the shore in a northerly direction is clear of danger to a point ½ mile southward of Little East River; from this position to Rous Point (at the western entrance of the river) the shore should not be approached within ¼ mile, in order to avoid several off-lying rocks. The bay between Rous Point and East River Point should be avoided, in consequence of shoal water and rocks.

A description of the dangers on the western side of the east branch of Mahone Bay will now be necessary, as some of them affect the approaches to Chester Harbor.

Mountain Shoals, three in number, lie to the southward and eastward of Mountain Island. The outer shoal is a small patch with 4¾ fathoms water, and from it the south point of Mountain Island bears N. 76° W. nearly one mile.

Spectacle Shoal extends off the eastern side of Saddle Island, and is ⅓ mile long in a north and south direction, with its center showing at low-water springs.

Snake Spit extends a short ¼ mile from the SW. side of Snake Island, having on its extremity only one foot water.

Graves Shoal, nearly circular in form and detached, is small in extent, with only 3 feet water on its shoalest part, from which the south point of Graves Island bears N. 48° W. nearly ⅔ mile, and Lobster Point S. 45° W. nearly one mile.

Long Spit takes its rise from the main shore between Lobster Point and Graves Island, and is composed of bowlders, stones, and gravel, uncovers as far out as ⅓ mile from the shore; near the end of the dry part are some large bowlders, which uncover at half ebb.

Lobsters Claws are two stony ridges. The eastern claw extends from Lobster Point in a S. 28° E. direction nearly ½ mile, a small portion of which uncovers about 400 yards from the point. The western claw is detached, and about ¼ mile in length, with deep water all around. From the shoalest spot, with 1¾ fathoms, Lobster Point bears N. 8° E. ⅓ mile.

Sheep Ledge consists of bowlders, the highest of which only cover

during extraordinary spring tides; from this point the ledge extends 100 yards northward and nearly 400 yards southward. From the highest part of the ledge the southern points of Birch and Quaker Islands are in line, bearing N. 67° E., and Round Island Nubble ⅔ mile distant in a S. 9° E. direction.

Clay Island Spit extends in a southeasterly direction from the south end of Clay Island. There are 3½ fathoms at the distance of ½ mile from the island, whence an irregular ridge, with 4 fathoms water, extends to the NE. and joins the shallow water off the NW. end of Quaker Island, he whole forming a crooked bar composed of sand, gravel, and bowlders.

Chester churches just open east of the peninsula, bearing north, clears the eastern edge of Clay Spit in 4 fathoms, and the south end of Woody Island just open south of Quaker Island N. 70° E. clears the southern edge of the spit.

Big Fish Shoal with 4¼ fathoms on it, from whence the south point of Big Fish Island bears N. 31° W. ¼ mile.

Chester Rock is a small rocky patch with 10 feet water lying immediately off the entrance of Chester Creek and a little outside the line between Norse Point and the neck of the peninsula.

Garret Cove is shoal, and from Norse Point a ridge of bowlders extends in a SE. direction, terminating at the distance of nearly 200 yards from the point in a bowlder with only 9 feet water. Zink Point, to the SE., may be approached within 200 yards.

Chester Harbor is commodious, safe, and comparatively easy of access. The majority of the population are engaged in the fisheries or lumber trade; a considerable amount of farm produce is raised, and a good business is carried on in manufacturing fish-barrels for the outports.

There are two channels into the harbor, the one to the southward being more direct than that to the eastward, which is narrow and somewhat intricate.

Tides.—The general surface of the water is raised a foot by southeasterly gales and depressed the same amount by northwesterly gales. In the northern portion of Mahone Bay the tidal stream is sluggish, but through the eastern Tancook Channel it runs at the rate of one knot per hour during its full strength; and through the narrow part of the western Tancook Channel the tide attains a velocity of 2 miles an hour, the flood setting to the northward and the ebb to the southward.

Directions.—When approaching Chester from an offing east of Cross Island steer to pass at a safe distance east or west of Big Duck Island, and thence for the channel west of Great Tancook Island, bearing in mind that the middle of Little Duck Island in line with Cross Island lighthouse, bearing S. 11° E., leads through the middle of the above channel, and that any part of Little Duck Island in line with Cross

Island will clear the dangers which lie off the west side of Great Tancook Island and the east side of Refuse Island, respectively.

On approaching Quaker Island keep 200 yards off its SW. side until Chester churches appear nearly to touch the east tangent of the peninsula bearing north, when alter course for them until the south point of Norse Island opens to the northward of the stony point on the north side of Quaker Island bearing east; then keep to the eastward and anchor in 6 to 8 fathoms, mud, with the north ends of Norse and Mountain and the west ends of Norse and Quaker Islands in line.

By the Tancook Channels.—If from the eastward and clear of Seal Ledge, which may be known by bringing Indian Point open of New Harbor Point, proceeding through the Eastern Channel, steer for the north end of Little Tancook Island; and when to the westward of New Harbor Point, alter course to the northward, so as to pass in mid-channel between Little Tancook Island and Indian Point.

By the western channel, when clear of the Seal Ledge as before, pass to the southward of the SE. shoals, which may be done by keeping SW. island open of Herring Point; when Green Island is open its own apparent breadth west of East Ironbound Island the SE. shoals will have been passed, and a more northerly course may be steered for the channel, bearing in mind that the west point of Little Tancook Island may be passed within 200 yards, but care must be taken not to near the NE. side of Great Tancook Island nearer than ½ mile.

From a position between Little Tancook Island and Indian Point, a vessel making for Chester Harbor should steer N. 40° W., until the northern points of Norse and Mountain Islands are in line, and then alter course so as to pass off the north end of Mountain Island.

When Mark Island opens out west of Mountain Island steer S. 75° W. to clear the Lobster Claws, and after passing them—which may be know by Lynch Island opening out west of Woody Island—alter course so as to pass mid-channel between Zink Point and Norse Island, and anchor as before directed.

A more direct channel into Chester Harbor is that between Mountain and Mark Islands, and when the north point of Lynch Island appears to touch the south end of Woody Island bearing S. 30° W., Mark Island spit will have been passed, and the course should be altered to N. 68° W., so as to pass midway between Norse Island and Zink Point, and anchor as before directed.

Good Anchorage will be obtained in the NW. angle of Mahone Bay, to the NW. of Chester Harbor; the entrance to this arm of the sea lies between Clay and Frog Islands, but there are several dangers to be avoided, for the positions of which the mariner is referred to the chart.

Being westward of Birch Island bring the SW. tangent of Great Tancook Island open west of Birch Island, two-thirds the apparent breadth of the latter island bearing S. 40° E.; this mark will lead up

the NW. arm in safety between the shoals, and anchorage may be selected according to circumstances.

St. Margaret Bay is a noble sheet of water about 25 miles in circumference, 9 miles in depth, and upwards of 2 miles wide at the entrance, and compared with other portions of this coast is unusually clear of dangers.

The distance between Dover Castle and Middle Point (so called in consequence of its central position between Peggy Point and Paddy Head, forming the eastern entrance of the bay, is about 4 miles, with a general trend to the NW.

Seal Ledge consists of broken ridges of rocks, which cover at half flood, but generally shows a break. The highest part of the ledge uncovers about 200 yards at low water, and lies nearly a mile S. 73° E. from Herring Point (at the southern extremity of Aspatagoen Peninsula), with a deep-water channel between, and N. 30° E. 2 miles from the east point of East Ironbound Island.

The north point of Little Tancook Island, seen a little open southward of New Harbor Point bearing N. 82° W., clears the ledge on its south side.

Gravel Island Shoals lie off the south end of Gravel Island, with which they are connected by shallow bars of shingle. The outer shoal uncovers at half ebb, and at low water shows a full ¼ mile of its length; its highest point is nearly ½ mile south from the south point of Gravel Island.

There are no good clearing marks for these shoals, but the east point of Gravel Island kept to the westward of N. 31° W. will lead east; and the center of Seal Ledge (when showing) in line with the west end of East Ironbound Island bearing S. 47° W. a little southerly will lead south of Gravel Island Shoals.

SW. Island, ½ mile in length and 40 feet high, forms the salient point on the western side of St. Margaret Bay. The south and east sides of the island can be approached to 100 yards, and further to the northward the shores of Owls Head and Horse Island are steep-to.

NW. Cove, within Horse Island, and on the western side of St. Margaret Bay, is not a good anchorage. If passing north of Horse Island, care must be taken to avoid the Horse Rock, small in extent but with only 1¾ fathoms on its shoalest part.

Charley Rock, small and dangerous with 1¾ fathoms on it, and deep water all round, lies ½ mile N. 50° E. from the south point of SW. Island.

Mill Cove.—At the distance of 2 miles south from Green Point is Mill Cove, which forms an admirable anchorage during westerly winds. From thence to the southward as far as NW. Cove the coast is bold, rugged, and free from danger.

Green Point Shoal, with 3 fathoms water, lies 400 yards north

from the north extreme of Green Point; the shoal has deep water around it, and may consequently be passed on either side.

Directions.—If from the southward, avoid bringing the tangent of Dauphney Head to the westward of N. 41° W., which will clear Slaunwhites Ledge on its western side, and when Red Bank bears east the vessel will be abreast Green Point Shoal, and from thence may steer up mid-channel, anchoring as convenient.

Slaunwhites Ledge is a ridge of rocks and sand and lies on the eastern side of the entrance into Hubbard Cove. The actual rocky ledge is about 300 yards in length, its highest rock on the south end only just covering at high water; but it is surrounded by an extensive plateau of shoal ground nearly ½ mile in length, which terminates on its north end in a small sandy knoll known as North Shoal, which uncovers at half tide, and lies 800 yards distant from Green Point in line with Red Bank bearing N. 64° E.

Ingram River is about ½ mile across the entrance, from whence it runs in northward 1¼ miles to its head, where the waters of a fresh-water river are received.

The western shores of this indentation are clear; on the eastern side, ½ mile from the head, is some shoal ground, which will be cleared on its western side by keeping Wood Island well open of East Head.

Croucher Shoal is the only danger off the entrance to Ingram River; the least water is 3¼ fathoms. Vessels may pass east or west of the shoal by bringing East or West Heads to bear N. 17° E. until Snares Point is well shut in behind Black Point.

Head Harbor is alike capacious and secure, with a sufficient depth of water to accommodate vessels of the largest draft. The anchorage extends from within Strawberry Island along the northern shore, but the best anchorage is within Clam Island, which is only a little more than 200 yards in extent, with a very shoal spit extending 200 yards to the NE.

There is a deep-water channel on either side of the island, but the one on the north side, being the wider of the two, is to be preferred, more especially for large vessels. From between Indian Point and Croucher Island, which may be considered the entrance points of the harbor, the distance is a little over ½ mile; within these points there are no detached dangers which would affect vessels of small draft, and but few to be avoided by large vessels.

Sand Cove Shoal is a small detached rocky patch with 4¼ fathoms water, and lies with the south end of Wood Island apparently touching Black Point bearing S. 87° W., and the Episcopal Church at Smelt Brook N. 3° W., nearly.

Strawberry Island Shoal is a detached rocky patch, with 4¾ fathoms water, having deep water all round; it is distant 250 yards from Strawberry Island in a southeasterly direction and lies with East Head just open east of Strawberry Island N. 40° W.

Croucher Island is the outermost and the largest of three small islets, almost connected, which lie off the entrance of Head Harbor, occupying a space of about ½ mile, NE. and SW.

The main channel into the harbor is to the southward of the group, but within on the north side there is a narrow deep-water passage 200 yards across between the 5-fathom lines.

French Village Harbor.—About ¾ mile N. 30° E. from Wedge Island is Davys Point, forming the south point of the entrance, which is ½ mile broad. Within the point on the south shore is an indentation, off which secure anchorage may be obtained in about 11 fathoms, mud.

From abreast the anchorage the village is scattered along the whole length of the southern shore, upwards of a mile in length.

Ambrose Rock, small in extent, with 3½ fathoms on it, and deep water around, is beyond the range of the usual anchorage, and lies with the Episcopal church belfry bearing S. 57° E.

Davys Rock, 400 yards in length, with 9 feet water on its shoalest spot, lies with Davys Point bearing S. 68° E. about ⅓ mile, Indian Point N. 3° W. nearly ½ mile. The deep-water channel on this, the northern side of the shoal, is narrowed to about ¼ mile by a spit which extends to the southward from Indian Point.

Middle Shoal is ¼ mile in length north and south; from the shoalest part, with 5 feet water, Wedge Island bears N. 30° E. one mile, and Little Thrum Island S. 40° E. ¾ mile.

The green line of the north end of Luke Island open southward of Little Thrum Island, bearing S. 54° E., leads SW.; and the east end of Clam Island in line with the outer end of the Indian Point N. 25° E. leads westward of Ringdove Shoal.

Directions—Inside Channel.—From about ½ mile west of the north point of Shut-in Island steer north until the west end of the eastern and larger lump of Indian Point opens outside Wedge Island bearing N. 13° E; steering with these marks on will lead between Little Thrum Spit and Middle Shoal, and when the green line of the north end of Luke Island opens south of the Little Thrum bearing S. 54° E. a vessel will be off the spit, and should steer for McDonald Point N. 28° E., which will lead through in the deep-water channel between Wedge Island and Hayman Point. When the latter point is in line with the stony tangent of George Island bearing S. 20° E. alter course to north, when the ship's head should be pointing between the two lumps of Indian Point, bearing in mind that shoal water extends 300 yards in a southwesterly direction from McDonald Point.

Proceed on the above course until Church Point is in line with Davys Point bearing N. 58° E., and immediately alter course for the south tangent of the peninsula opposite Croucher Point N. 36° E., and as Croucher Island nears the outer tangent of Indian Point gradually steer to the eastward until these objects are in line bearing N. 56° W., and anchor in 11 fathoms, mud, with Church Point N. 51° E.

Outside Channel.—After passing Shut-in Island at a safe distance steer N. 9° W. until Davys Point (well open north of Wedge Island) bears N. 47° E., then alter course for the point, and proceed to the anchorage as before directed.

Wedge Island, about 300 yards in length and 30 feet elevation, lies ¾ mile north of George Island.

Long Cove is another sheltered spot in the immediate vicinity of Luke anchorage, and can be entered from the latter through the narrow channel east of Troop Island, bearing in mind that in the middle of its south entrance there is a small rise with 3½ fathoms.

Another channel ¼ mile broad lies north of Troop island, between it and George Island; off the south end of the latter shoal water extends nearly 400 yards in a south direction.

Little Thrum Island.—North of Luke Island is a group of several small islets, the smallest and outermost being Little Thrum Island, about 100 yards long; from it a shallow spit extends in a northwesterly direction ¼ mile; there is also shoal water on its SW. side.

The west tangent of the inner or eastern lump of Indian Point just open west of Wedge Island clears the west side of Little Thrum Spit, and leads about mid-channel between George Island and Middle Shoal.

Luke Anchorage.—At 1½ miles to the northward of Shut-in Island is Luke Islet, 40 feet high; within it there is excellent anchorage in 8 to 10 fathoms, where vessels may remain in security during gales from any quarter.

The anchorage is very accessible; if from the southward, avoid the shoal water off the SW. end of the island, and when the east end of Troop Island opens east of the SE. stony point steer for the anchorage with the north end of Shut-in Island seen over the SE. point of Luke Island, and Big Thrum Island midway between Troop Island and the northern stony tongue of Luke Island.

Shut-in Island is ⅔ mile in length, and attains an elevation of 200 feet. Although there is a deep-water channel leading inside the island there are numerous rocks, which render this passage unadvisable without the assistance of local knowledge. The rocks referred to will be cleared by keeping Middle Point open of Paddy Head.

The east and west shores of Shut-in Island are steep-to, but in rounding the north point do not approach nearer than 300 yards; within the island the holding ground is good, and the place well sheltered, secure, and smooth during southerly gales.

Middle Point Rock, with 3¼ fathoms water, lies NW. ½ mile from Middle Point. The two tangents of Paddy Head and Shut-in Island apparently just touching and bearing N. 2° W., lead about 200 yards westward of Middle Point Rock.

Crawford Ledge, which is steep-to outside, lies nearly 400 yards within Middle Point Rock in the direction of Jack Island. Peggy and

Middle Points in line bearing S. 45° E. lead between Crawford Ledge and Middle Point Rock.

Halibut Rock is small, and covers at the first quarter flood; it lies off Peggy Point 200 yards.

Horseshoe Ledge consists of ridges of rock which uncover at half ebb. From the highest part of the ledge East Ironbound Island light-house bears S. 62° W. 4¾ miles, and the south point of SW. island N. 17° W.

Tides.—The rise and fall of tide in St. Margaret Bay are regular, but the tidal streams are very weak, excepting at the entrance between Shut-in Island and Peggy Cove on the eastern side, and from Owls Head to SW. island on the western side; between these shores the stream attains a velocity of about one knot per hour in the strength of the tide, the flood running to the northward and the ebb to the southward, but following the trend of the shores on either side when closed in.

Directions.—From the southward or westward, and being outside Green Island, do not bring the north point of Green Island to bear southward of S. 36° W. until the whole of Little Tancook Island is open east of East Ironbound Island, in order to avoid the NE. Shoal.

To pass east of the Horse Shoe ledge bring Owls Head well open east of SW. island bearing N. 32° W., and to pass westward Owls Head should be kept open west of SW. island bearing north, in this latter case when the tangent of New Harbor Point bears S 80° W., the vessel will be to the northward of the Horse Shoe ledge and a course may be steered for Shut-in Island, taking care to avoid Charley Rock on the east side of SW. island. When Clam Island, east tangent, is in line with the outer end of Indian Point bearing N. 25° E., the vessel will then be clear of Middle Shoal, and may steer N. 19° E., rounding Indian Point 200 yards off shore, and after passing the point steer to the eastward until the western tangents of Wedge Island and Indian Point are in line bearing S. 6° W.

Keeping the above marks on, and steering N. 6° E., will lead in mid-channel between the Sand Cove Shoal and Strawberry Shoal; and when the north end of Strawberry Island and Black Point are in line bearing S. 78° W. steer to pass north of Clam Island, taking care not to shut in Croucher Island with the south point of Strawberry Island, in order to avoid Marsh Gutter Shoal, with 3½ fathoms.

A good mark for rounding the NE. spit of Clam Island is to bring Black Point, on the northern shore of St. Margaret Bay, in line between Potato Point and the main, and anchor in 9 or 10 fathoms mud, with the east end of Clam Island apparently touching the outer end of Indian Point, and Potato Island its apparent breadth open south of Black Point.

Port Dover.—As Black Rock only just covers at high-water springs, it is very seldom that its position can not be identified; but on such ex-

ceptional occasions, to pass east of the rock bring the eastern tangents of Myra and White Islands apparently to touch, bearing N. 16° E. until Sol Point (having houses on it) opens east of Fleming Island, when proceed in that direction, and on nearing Fleming Island alter course so as to pass between it and Fleming Ledge, and anchor in 9 or 10 fathoms, mud, with Fleming Ledge in line with the south end of White Island and the east end of Dover Castle touching the west end of Fleming Island.

Leary Point, midway between the high-water lines of High and White Islands, bearing N. 30° E., leads through in deep water between Dover Castle and Black Rock, as does also Fleming, Ledge, seen just open of Fleming Island, N. 9° W.

Cabbage Garden Shoals consists of two rocky patches off the entrance to port Dover; the outer, about 200 yards in extent, has 10 feet water, and lies N. 69° E., a short ¼ mile from the south point of Fleming Island.

The inner shoal (of NW. the former) just uncovers at low-water springs, and lies NE. 400 yards from Fleming Island.

Directions.—Blind Bay affords good anchorage north of Myra Dry Ledge. Proceeding through the main channel between the Black Rock and Shag Bay Breakers, with the two gull rocks in line, alter course when necessary so as to pass between onter Gull Rock and White Island, or steer for Doyle Island, N. 4° E.; it will then appear about midway between Black Point and Myra Island. Avoid going to the westward of the line where Doyle and Myra Islands appear to touch, in order to keep clear of the Round Rock and Middle Ground.

If the draft of water renders it necessary to avoid a 4-fathom patch about 250 yards off the north point of Myra Island in an easterly direction, steer towards the eastern shore with Leary Point and White Island, just open of each other, until Myra Dry Ledge is in line with the south tangent of Clarke Island; then steer round Myra Dry Ledge, keeping an offing of 200 yards off its eastern end, and anchor in about 6 fathoms, mud, in a berth equidistant from the ledge, Clarke Island, and the rock south of Flat Island.

Middle Ground, on the western side of the channel leading into Blind Bay, is about 200 yards in diameter, with two rocky rises 100 yards distant from each other north and south. The northern point is just awash at low-water springs, the other has 3 feet water.

Shag Bay.—Shag Head forms the eastern entrance point common to Shag and Blind Bays. Shag Bay, 3½ miles in length, with a general trend to the NE., has good anchorage off a small cove near its head on the western shore.

Shag Bay Breakers consist of a rocky ridge, ½ mile in length; the two shoalest parts, with only 4 feet water, are at each extremity; and Fader Head, seen between the two Gull Rocks at the entrance of Shag

Bay, bearing N. 22° E., leads directly over them, and consequently over the long axis of the shoal.

Green Shoal, about 250 yards in length, with 6 feet least water, lies eastward of Shag Bay Breakers, with a deep-water channel ¼ mile broad between the 5-fathom lines.

Gull Shoal, small in extent, with 6 feet water, is nearly equidistant from the Outer and Inner Gull Rocks and main shore; the passage between it and the latter being 350 yards across.

Frying-pan Rock, which covers during last quarter flood, is the highest part of a shoal about 200 yards in extent, and bears from Black Point Ledge (which is 3 feet above high water) S. 49° E. about 200 yards. From Frying-pan Rock, White Island, and Dover Castle are apparently just overlapping, bearing about S. 58° W., the navigable channel on its eastern side being 200 yards across.

Round Rock, with 4 feet water, is steep-to all round; it lies 300 yards off Leary Point in an easterly direction; from it the Outer Gull Rock is on with the north point of Shag Head.

West Channel.—A good leading mark west of Shag Bay Breakers is the two Gull Rocks in line bearing N. 38° E. On passing the Outer Gull Rock, keep about 200 yards off, especially on the north side, after which close the Inner Gull to within 200 yards, so as to pass midway between the Inner Gull and Frying-pan Rocks, and thence proceed up the bay and anchor in about 8 fathoms, mud, off NW. Cove, with Fader Head bearing S. 13° W.

Black Rock is the outer of the western dangers, and lies S. 71° E., ¼ mile from a remarkable bare rocky islet, 40 feet high, known as Dover Castle. There is a narrow but deep water channel between them, but caremust be taken to avoid a 3-foot patch which lies 100 yards from the Black Rock in a northerly direction.

East Channel.—Black Point, just open of Shag Head, bearing N. 18° W., leads eastward of Kittee Wittee and Green Shoals and towards Shag Head, which may be rounded close-to. Immediately after passing the head close the eastern shore until Fader Head opens well out east of Inner Gull Rock, bearing N. 18° E.; this mark will lead on the eastern side of the Gull Shoal, after which proceed up to the anchorage south.

Prospect Harbor is situated at the mouth of an arm of the sea known as Prospect River, upwards of 3 miles in length, and distant from Mars Head about 2½ miles in a northerly direction. The anchorage is within Heron Island, on the eastern shore of the river, where large vessels may find good shelter, and although there are dangers off the harbor, they are such as can easily be avoided when once the islands marking the approaches thereto have been identified.

The town of Prospect is built in a somewhat straggling manner on the narrow western point of Prospect River. The population subsist on the produce of adjoining fisheries; the church (Roman Catholic) is

a conspicuous object, and can be seen from a long distance at sea; the principal import is flour, and the only export fish, as the soil, being sterile, would render agricultural pursuits unproductive.

Betty Island is ⅞ mile long in a north and south direction; the southern point, Brig Point, has a lighthouse upon it. It lies midway between the entrance to Prospect River and Back Bay.

SW. and Devereux Shoals are both isolated rocky patches lying off the southwest end of Betty Island, about ¼ mile off shore.

White Horse Rock, with only 1¼ fathoms water, lies between Hopson Island, 83 feet high, and Norris Bald Rock, 20 feet high; from the latter it bears S. 61° E. about ¼ mile; from the rock the south point of Breakfast Island is in line with the north point of Shannon Bald Rock.

Heron Rock is small, detached, and shows at low water; it is steep-to on its east side, and lies about 100 yards in an easterly direction from the northeast end of Heron Island, there being 3 fathoms in the passage between. As this rock is in close proximity to the anchorage, care must be taken, on bringing up, to give it a clear berth. From the rock Burnt and Shannon Islands are nearly touching.

Kittee Wittee Shoal, on which the sea breaks during bad weather, is composed of rock about 300 yards in extent, the shoalest part, with 5 fathoms water, lies with the north point of Burnt Island, in line with the north end of Norris Bald Rock bearing N. 77° E., the latter being ¾ mile distant.

SE. Shoal is nearly 200 yards in extent, with 2¾ fathoms water, and breaks during an ordinary southerly gale.

Tides.—In connection with the tides along this coast Captain Shortland remarks that winds influence the time of high water, especially if during one of the rotatory gales a shift of wind occurs before high water. At the commencement of a SE. gale there is a tendency to retard the time of high water, and this effect continues until the gale has reached its full height; but as the wind diminishes in force this principle ceases, and a contrary effect ensues. In extreme cases the time of high water will be found to differ fully an hour from undisturbed periods.

Western Channel.—Bring Norris Bald Rock to bear N. 10° W. and proceed on that course, rounding the rock on the north side, which is steep-to; then steer N. 69° E. for the highest part of Heron Island, taking care not to approach the high-water line of Saul and Church Points within 200 yards. When the spire of Prospect Church is in line with Church Point alter course to round Heron Island, taking care to keep Saul Point well open of Heron Island until Burnt and Shannon Islands are seen open of each other in order to avoid Heron Rock, thence steer for the anchorage in 7 to 9 fathoms, mud, with Prospect Roman Catholic Church in line with the north end of Heron Island and midway between that island and the main shore.

Back Bay, a mile from Mars Head in a northerly direction, is rendered unserviceable as an anchorage in consequence of numerous dan-

gers across its entrance, in addition to which the space of available deep water is not only exposed to the SW., but is very limited in extent.

Grampus Rock, with only 9 feet water, is the outer of several rocky patches extending from Mars Head nearly 800 yards to the southward.

Turner Bay, about 2 miles within Mars Head, and at the northwestern angle of Pennant Bay, is open to the SE., but the anchorage is good in 8 or 9 fathoms, mud, midway between Cat Island and the western shore, with Church and Tenant Points in line.

Directions.—To enter Turner Bay by the western passage bring Turner Bay Rock to bear N. 29° E. and steer for it, passing midway between Broad Rock, which covers at high water, and Puffer Shoal, on which the sea is said always to break. Pass westward of Turner Bay Rock, between it and the Black Shoal, keeping nearer to the former, which is quite bold on that side; from thence gradually steer to the northward until the south tangents of Seven Islands and Pennant Island are in line, in order to avoid the 13-foot shoal, which lies northward ¼ mile from Black Shoal and 400 yards from Tenant Point. With the above marks on the vessel may steer to the westward towards the anchorage.

Pennant Bay, next west of Sambro Harbor, lies between Pennant Point and Mars Head, the latter being a rocky peninsula about 70 feet high. The bay is 3 miles broad between the entrance points and about 2 miles deep; it is thickly studded with rocky shoals and islands, but affords shelter to those acquainted with the passages between them. The land at the head of the bay is of moderate height, Hospital Hill, the highest part, rising 250 feet above the sea.

Pennant Harbor, at the northeastern angle of Pennant Bay, though small in extent, has secure anchorage within several small islands.

Directions.—When rounding Pennant Point be careful to avoid the Broad Shoal, which extends 400 yards off it to the southward and eastward. Hospital Hill, in line with the western shoulder of Pennant Island, will lead well clear of this danger.

After passing 200 yards to the eastward of Bald Rock steer N. 23° E. for Thrumcap Island until the Seven Islands are seen open northward of Pennant Island, when the Middle Ground will be passed; then steer round to the eastward and northward of Thrumcap Island at the distance of 200 yards, to pass between it and the rocky 3-fathom shoal lying ¼ mile northward from it. Having passed to the westward of this shoal, anchor within Martin and Saddle Islands, as convenient, from 200 to 500 yards from them, in 6 or 7 fathoms, mud bottom.

CHAPTER V.

NOVA SCOTIA—SOUTHEAST COAST—SAMBRO HARBOR TO CAPE CANSO

Sambro Harbor, lying at the head of the bay formed between Pennant Point on the west and Cape Sambro on the east, has anchorage within the Isle of Man. The heavy sea during southwesterly winds is much broken by the ledges outside, but the shelter is imperfect, and the dangers off and in this harbor are so numerous that it should never be attempted by large vessels, excepting in a case of extreme necessity.

From the Westward.—To enter Sambro harbor from the westward bring the highest hill on Cape Sambro over the western rise of Inner Sambro Island, and with these marks on proceed between Pennant Point and Bull Rock. After passing the latter at the distance of 300 yards, to clear the shoal water off it to the northward, steer N. 35° E., or with the east ends of Round Island and Isle of Man in line, if these tangents can be distinguished; if not, pass 300 yards eastward of the Island Rock, and continue to steer N. 35° E. until Fairweather Rock is seen open southward of Inner Sambro Island, which will clear the Torpey Ledge.

Then, to avoid the Middle Ground, steer more easterly, so as to pass not more than 200 yards to the northward of the west end of Inner Sambro Island, which is quite bold, and when the marks for clearing Cowley Rock come on, viz, Fairweather Rock apparently touching the western point of Inner Sambro Island bearing S. 13° W., steer N. 13° E. and proceed to the anchorage under the Isle of Man in 6 or 7 fathoms, mud bottom.

Fogs.—It frequently happens that the weather is clear within Sambro Lighthouse, although very thick several miles without.

Pilots.—Sambro Island is the resort of pilots.

Sambro Ledges.—From Smithson Rock, the outermost of the western ledges with only 2 fathoms water, Sambro Lighthouse bears N. 43° E. 2½ miles; Pennant Point N. 55° W. 2¼ miles. Gull Rock, little more than its own breadth open of White or Catch Harbor Head, bearing N. 32° E., also leads over this dangerous rock, as well as over Mare Rock, which, with 6 feet water, lies nearly ¾ mile further in.

Mark.—The west end of Pennant Island, on with the tangent of Pennant Point N. 38° W. leads ⅔ mile to the westward of Smithson Rock.

Whistling Buoy.—A whistling buoy painted black and white in vertical stripes is moored in 25 fathoms near the southern end of Sambro

outer bank with Pennant Point bearing N. 53° W., distant 7½ miles, and Sambro Lighthouse, N. 26° W., distant 5¼ miles.

Hennesy Bank, Shoal Ground, Barse Ground, and Outer Bank.—These are rocky fishing grounds, with depths varying from 8 to 20 fathoms, and should be avoided by vessels during bad weather as they cause a heavy half-breaking sea.

SW. Breaker, which almost always shows, lies 1¼ miles eastward of Smithson Rock, and from it Chebucto Head is seen over the eastern extremity of Sambro Island, the latter bearing N. 21° E., 1½ miles.

A black can buoy, with staff and vane, and marked SW. Breaker, lies in 12 fathoms water, nearly 400 yards south of the SW. Breaker.

The Sisters are the outermost of the eastern Sambro Ledges, and from the lighthouse on Sambro Island they are distant 1⅞ miles. Their position is pointed out by Black Rock, 15 feet high, and from which they are distant ⅛ mile to the eastward. Several rocks of this cluster uncover at low water, and their position can always be seen; but the Blind Sister is more dangerous, having 9 feet over it at low water.

An iron bell-buoy, painted black and surmounted by a cage, lies in 26 fathoms water, ¼ mile from the Blind Sister Shoal; with Sambro Island Lighthouse bearing S. 87° W., and Chebucto Head Lighthouse N. 3° E

Caution.—In approaching Halifax Harbor from the eastward, care must be taken to make allowance for a set to the westward towards the Sisters Rocks.

Clearing Marks.—Sandwich Point in line with Chebucto Head, bearing N. 15° W., will lead one mile eastward of Sambro Ledges. By night Sherbrook Tower light on Maugher Beach, just open east of Chebucto Head, will clear all the Sambro Ledges as well as the Bell Rock and Duncan Reef.

The lead will give little or no warning when approaching these ledges from the eastward, on which side the bank is very steep, the depth being 45 fathoms within less than ½ mile from the Sisters.

Catch Harbor has 9 feet water on its bar, with 16 feet mud within, where its shores are occupied by the houses and stages of fishermen. At the head of the harbor is a chapel, as well as a fine stream, the outlet of the waters of several small lakes which lie about a mile to the northward.

Ede Rock, with 9 feet water on it, lies nearly midway between the Sisters and Morris Point, on the western side of the entrance to Catch Harbor.

Halifax Harbor is one of the finest and safest in the world, affording space and depth of water sufficient for a large number of vessels; and although the dangers off its entrance are such as to render great caution necessary—especially during the fogs which usually accompany all winds from the sea—it is easier of ingress and egress than any other large harbor on the coast. The entrance, 5½ miles wide, lies between Devil Island to the NE. and Chebucto Head to the SW.,

and from mid-position between these points the general ,nd of the harbor is northward for a distance of 15 miles, to the head of Bedford Basin.

The city of Halifax is the capital of the province of Nova Scotia, and contained in 1888 about 45,000 inhabitants; it is built on the declivity of a peninsula on the western side of the harbor, and 8 miles within its entrance. The citadel, immediately in rear of the city, and in a central position between its two extremes, stands on a commanding elevation 227 feet above the sea at high water, and with its flagstaff forms a leading mark easily recognized from a vessel off the entrance of the harbor.

The harbor opposite the town is about ¾ mile broad, but at the Narrows—about a mile above the upper end of the city—it contracts to less than ¼ mile, and then expands into Bedford Basin, which has an area of 10 square miles, and is completely landlocked. On the eastern side of the harbor, and immediately opposite the Naval yard, is the town of Dartmouth; between it and the city steam vessels ply continually. Eastern Fort, with its tower, stands close to the shore 2 miles farther to the southward on the same side of the harbor.

Halifax Harbor has the advantage of never being closed by ice; for although in very severe winters, when the low temperature has been accompanied by a continuance of calm weather, the inner part of the harbor has been frozen over, yet this has occurred only at intervals of many years; and even then, as the ice never extends beyond George Island, there is always a sufficient space of open water between it and Macnab Island in which vessels may anchor in safety. Even when the ice forms opposite the city, it never remains long, for it is broken up by the first southerly wind of sufficient strength to send a swell into the harbor.

The smaller and landlocked harbors of this coast are in general all frozen over during the two or three coldest winter months; and so also are the larger harbors, excepting for short distances within their entrances, which are kept open by the swell from the southward. The coasting vessels are usually laid up in consequence from about the middle of December to near the end of March.

Dock.—The Halifax Graving Dock Company's dock is situated on the western shore of Halifax Harbor, about ½ a mile northward of the Royal Naval Yard. It will be 600 feet in length on the blocks, 86 feet wide at the entrance, with a depth of 36 feet on the sill at high water, ordinary springs. The Admiralty will have the right of priority of use of this dock.

Railways.—Halifax is the terminus of the Intercolonial railway, which affords communications with all parts of Canada, via Quebec and the United States, via St. John, New Brunswick.

Telegraphs.—Halifax is in telegraphic communication with all parts

of Canada, with the United Kingdom by submarine cable, and with the United States by cable and land lines.

Mails and steam communication.—The mails to and from the United Kingdom and Canada are landed and shipped at Halifax, while the Gulf of St. Lawrence is closed to navigation. There is direct steam communication between Halifax and the United Kingdom, Newfoundland, the West Indies, and the United States, all the year around.

Coal.—About 15,000 tons (partly Welsh) are usually kept in stock. Vessels are coaled rapidly without interruption by weather, either alongside wharves, or by lighters of about 120 tons, or schooners of from 50 to 200 tons. About 800 to 3,000 tons can be placed on board in one day, working day and night continuously; the larger quantity by the Dominion railway depot.

Time signal.—A gun is fired from the citadel at noon, mean time of the 60th meridian, equivalent to 4h. 0m. 0s. Greenwich mean time. This gun is fired for local purposes, and not for rating chronometers.

Charges.—Health dues, 2 cents per ton register; tugboat charges, as per agreement. Wharfage per day from $2 to $3; signal tax for each vessel, $1; discharging ballast per ton, 20 cents; general cargo per ton, 25 cents; ballast, cost per ton, stone, 35 cents; cost of loading, 20 cents; coal, cost of trimming per ton, 15 cents; cost of supplies, about the same as in American ports.

The United States is represented by a consul-general and vice-consul-general.

Pilotage.—Vessels shall pay one-half the tariff rates if spoken by a pilot, and is not accepted; the dues are,

Vessels of—	Inward.	Outward.
200 tons	$8.00	$5.00
200 to 300 tons	11.00	7.00
300 to 400 tons	14.00	9.00
400 to 500 tons	16.00	10.00
500 to 600 tons	18.00	11.00

Over 600 tons, an additional 50 cents for every 100 tons or part thereof inwards, and 25 cents outwards.

Automatic Buoys.—A buoy having a 10-inch whistle is moored in 36 fathoms, with Sambro light-house bearing S. 73° W. 8½ miles, and Chebucto Head light-house N. 75° W. 6½ miles. At 6 miles N. 60° W. from this buoy there is another automatic buoy, painted red, with a 10-inch whistle, in 21 fathoms water. From this buoy Chebucto Head bears S. 32° W. 1⅞ miles, and Sandwich Point N. 32° W. 4 miles.

Western Shore of the Harbor.—Chebucto Head is 106 feet high, and consists of a whitish granite, of which, together with clayslate, the steep and barren western shore of the harbor is composed. At the distance of 1¼ miles from Chebucto Head in a northerly direction is Portu-

guese Cove; and on a hill ¼ mile in rear of the cove stands Camperdown flagstaff, 168 feet above the sea.

Bell Rock, with only 7 feet water, lies about ½ mile off shore, with Chebucto Head, bearing N. 2° E. one mile. A black buoy, with staff and vane, is moored in 18 fathoms water, southeastward of the Rock. Another rock, with 4½ fathoms water on it, lies 200 yards N. W. from the Bell Rock; and as Duck Reef extends 300 yards from the shore towards them, the channel between is moreover nearly overlapped by Duncan Reef; it cannot be recommended. Duncan Cove, on the southwest side of Chebucto Head, affords shelter for boats.

Pilots are stationed at Chebucto Head. The pilot schooners carry a flag with two horizontal red and white bands, and unless met with at sea, vessels approaching Halifax Harbor should hoist their colors by day and at night, or during foggy weather a gun should be fired.

Herring Cove is a secure harbor for small craft and boats, having 6 feet at low water in its narrow entrance, and 8 feet, over soft mud, within. At its head a brook discharges the waters of a chain of small lakes.

York Redoubt light may be easily recognized by its flagstaff and position; it stands 177 feet above the sea, and nearly abreast the light-house on Maugher Beach.

Pleasant Point, at the entrance of the Northwest Arm, is 1½ miles farther in, and will be recognized by its batteries and by the tower on its summit, 114 feet above the sea; George Island, also, which lies off the southern end of the city, will be readily known by its redoubt and tower.

Prohibited Anchorage.—Vessels are not allowed to moor in Halifax Harbor westward of the line of the light-houses on George Island and Sherbrook Tower (MacNab Island) in one, to leave room for ships going alongside the wharves.

Eastern Shore of the Harbor is less rocky and barren than the western, being formed of ridges of drift sand, clay, and bowlders, resting on clayslate; it is inhabited all the way to Dartmouth. At ¾ of a mile to the northward of Devil Island is Barry Beach (of shingle), inclosing a shallow pond, which affords shelter to boats.

Eastern Passage.—The entrances to the eastern passage lie on either side of Lawler Island; that to the eastward, between the island and the main, being the deeper, and having 10 feet over its bar at low-water. Only 5 feet at that time of tide can be carried through between Lawler and MacNab Islands; there are rocks in the entrance and off the south end of Lawler Island, as will be seen on the chart.

Macnab Island.—On Maugher beach, at the western extremity of the island, the light-house—known as Sherbrook tower—shows out as a very conspicuous object from the entrance of the harbor. The island is well cultivated, and has hills of sand, clay, and bowlders of various elevations, the maximum height being 152 feet above the sea.

Ives Point, the NW. extremity of Macnab Island, is a steep clay bank, with a shingle beach curving out from it to the NE.

Submarine Telegraph Cables.—Two submarine telegraph cables are landed at the cable house, on the shore westward of George Island; they follow the direction of the western shore, until off Chebucto Head; thence, one is laid to Ballinskellig Bay, Ireland, and the other to Rye Beach, near Portsmouth, United States.

Thrumcap Islet is connected with the SW. extremity of Macnab Island by long shingle beaches, inclosing a shallow pond. It is 30 feet high, and 300 yards long, but its cliff of red sand and clay is fast wasting by the action of the sea.

Thrumcap Shoal extends one mile to the southward from the islet. Its SW. extremity is marked by a red buoy lying in 8 fathoms water with George Island just open to the westward of Ives Point; the Graham Head (10 miles to the eastward) seen well open southward of Devil Island. Devil Island high light open south of the low light, leads south, and George Island light open west of Sherbrook tower leads west of Thrumcap shoal.

Light-house Bank extends ¾ mile to the southward from Maugher Beach. Devil Island light-houses opens south of Macnab Island (seen over the shingle beaches), bearing S. 83° E., leads south of the bank. From the least water, 3 fathoms, the light-house on Maugher Beach, distant ½ mile, is in line with Ives Point.

Horseshoe Shoal.—Shallow water extends westward and northward from Maugher Beach to the distance of 400 yards. In Macnab Cove the anchorage is good in 7 or 8 fathoms, mud; the best berth being with Sandwich Point seen over the Horseshoe Shoal, and the western sides of George Island and Ives Point in line.

A red buoy is moored in 8 fathoms, near the north side of the Horseshoe Shoal, with Sherbrook Tower bearing S. 7° E. 450 yards.

Ives Knoll, awash at low spring tides, extends 800 yards from the beach to the northward of Ives Point, or towards George Island. A red buoy is moored in 8 fathoms near the western side of this bank, and distant 200 yards west from the knoll.

Rock Head Shoal, the outer and most dangerous shoal off the entrance of Halifax harbor, is about 600 yards in length, and its shoalest part, with 3¼ fathoms water, lies with a tower of George Island in line with Ives Point, bearing N. 30° W.; Sambro Island in line with White Head, bearing S. 27° W., the light-house on the island being open; and Devil Island light-houses N. 25° E., 2⅓ miles.

A buoy, black and white vertical stripes, with staff and cage, is moored near the southwest end of this shoal in 6¾ fathoms, rocky bottom; with the eastern end of George Island in line with Ives Point, and Sambro Island open of White Head, bearing S. 30° W.

Portuguese Shoal, a small rocky path with 5 fathoms water, lies S. 47° W., ½ mile from Rock Head Shoal, and from it the east point of

George Island is just touching the west side of Sherbrook Tower, on Maugher Beach; Sambro Island is concealed behind Chebucto Head; and Camperdown flagstaff bears S. 60° W. A buoy, with red and black horizontal stripes, is moored on its western side in 6 fathoms, with George Island seen just open westward of Sherbrook tower, bearing N. 24° W.; Camperdown flagstaff S. 63° W.; and Devil Island lighthouses N. 33° E.

Neverfail Shoal, upwards of 200 yards in length, has on its shoalest part 4½ fathoms, and from it the eastern side of George Island appears in line with the steeple of a Roman Catholic chapel at Dartmouth; the tower on Pleasant Point is seen over the point at York Redoubt; and Hartland Point over the northern point of Devil Island, and in line with the Thrumcap Buoy, which bears N. 57° E., distant about one mile.

Lichfield Rock, of small extent, with 2½ fathoms on its shoalest spot, lies S. 88° W., ⅔ mile from Neverfail Shoal. A black can buoy, with staff and cage, lies on its eastern side, with the tower on George Island in line with Sandwich Point; Devil Island and Hartland Point apparently touching, bearing N. 62° E.; and the steeple of the chapel at Herring Cove N. 51° W.

George Island open east of Sandwich Point, bearing N. 16° W., leads eastward of the rock, and the citadal flagstaff apparently just touching Sandwich Point, bearing N. 23° W., will lead through between it and Neverfail Shoal, which is the most direct, and therefore the preferable channel, although the deepest water is between Lichfield Rock and the land, from which it is distant ¾ mile.

Mars Rock, with 3½ fathoms water, is the shoalest part of a rocky bank separated from the shore, between Herring Cove and Sandwich Point, by a very narrow channel. A black buoy is moored in 6 fathoms on its eastern side, with the citadel flagstaff just open east of Sandwich Point, the latter being distant ¾ mile; Hartland Point open south of the Thrumcap beaches; and the north side of Herring Cove bearing S. 59° W.

Middle Ground, a small gravel patch with 4½ fathoms water, lies S. 74° W., ½ mile from the northern point of Macnab Cove, and N. 50° W. ¾ mile from Sherbrook Tower. The steeple of the Roman Catholic chapel at Dartmouth in line with the eastern side of George Island leads eastward, and Chebucto Head just open east of Sandwich Point leads westward of Middle Ground.

Pleasant Shoal, which extends nearly ½ mile SE. from Pleasant Point, dries in some parts, and is covered by only a few feet of water nearly out to its edge. It is much in the way of vessels, as it diminishes the breadth of the navigable channel between it and Ives Point to ½ mile. A black buoy is moored close to its eastern extremity in 7½ fathoms, with Chebucto Head just open east of Sandwich Point; and the

north point of Macnab Island just open north of the bank of Ives Point, and seen over its beach.

Northwest Arm.—The entrance of the Northwest Arm is between the western side of Pleasant Shoal and the shoals in Purcell Cove. It carries a depth of 8 fathoms; and large vessels may ascend it through a narrow channel to within ½ mile of its head, or nearly to Melville Island, a distance of 2¼ miles.

Reed Rock lies 1,200 yards northward of the buoy on Pleasant Shoal, on the same side of the channel, and 400 yards off shore. It is small in extent, with 5 feet water, and its position is marked by a black buoy, moored in 8 fathoms, about 100 yards SE. of the danger. Chebucto Head just open of Sandwich Point leads 400 yards eastward of the rock.

Belleisle Spit lies ⅜ mile farther in, and extends ¼ mile from the shore to a black buoy in 5 fathoms, from which the SE. point of George Island bears N. 46° E. ½ mile.

Leopard Spit.—About ¼ mile farther in is the Leopard Black Buoy, which, with Belleisle Buoy, marks the western side of the clear deep channel between them and George Island, which is 250 yards wide between the 5-fathom lines.

Dartmouth Spit.—A red buoy is moored in 8 fathoms off Dartmouth Spit, with the Roman Catholic church bearing N. 39° E., Black Rock Point N. 63° W., and the eastern tangent of George Island S. 30° E. There is also a detached rock with 3¾ fathoms lying outside the 5-fathom line, and bearing S. 19° W. 360 yards from the Ferry wharf. The points on the eastern side of the Narrows (above the town of Dartmouth) in line, and bearing N. 61° W., lead westward of this rock.

Bedford Basin.—A railway viaduct, in which is an opening for the passage of vessels, has been erected across the Narrows. The openings on either side of a swinging portion, which is on the northern side of the Narrows, are each 80 feet wide, the depth in the southern channel 40 feet, and in the northern 27 feet.

Immediately after passing Wellesley Rock with 13 feet water, the channel is contracted by islets and rocks on either side, to the breadth of 300 yards; but it has 9 fathoms in it, and leads to a secure anchorage off the entrance of Sackville River, in 7 fathoms mud.

Navy Island Anchorage.—On the eastern side of Bedford Basin, 1½ miles from the Narrows, there is a small but secure anchorage within Navy Island. The entrance is to the northward of the island, and the only thing in the way is an old wreck, over which there is a depth of 3 fathoms at low water.

Tides.—It is high water, full and change, at Halifax dockyard, at 7h. 49m.; springs rise 6 feet; neaps 5 feet. The rise is greatly influenced by the winds, southerly winds causing high, and northerly winds low tides. The ordinary rate of the tidal stream does not exceed half a knot.

Directions.—The coast in the vicinity of Halifax is of moderate height, the hills near the shore being seldom 200 feet above the sea. To the eastward of the harbor as far as Jedore, almost all the headlands present cliffs of reddish sand, clay, and bowlders to the wasting action of the waves; whilst to the westward, as far as Mars Head, granite rocks—nearly white—predominate.

The bank of soundings off Sambro Island, terminating in a point, at the depth of 30 fathoms, 5 miles south of the Sambro ledges, offers considerable assistance to vessels approaching Halifax from the westward in the thick fogs which so frequently prevail. From the eastward the approach is rendered comparatively easy by the absence of outlying dangers after passing Shut-in Island, and by the soundings deepening out with tolerable regularity to 30 fathoms, at distances varying from 4 to 6 miles from the shore; but when within two miles of Chebucto and White Heads, the depth of 30 fathoms will be found within ½ mile from the shore. Attention to these soundings, combined with the explosive signal at Sambro Island light-house and the fog whistles on the automatic buoys moored at the entrance of the harbor and off Chebucto Head, may enable steam vessels to enter the harbor notwithstanding the fog, though it would be more prudent—especially in large vessels—to avoid attempting it under such circumstances.

From the Westward.—Pass Sambro Light-house at the distance of 3 or 4 miles, and when Sandwich Point is seen open east of Chebucto Head, bearing N. 13° W. (the clearing mark for the eastern side of Sambro Ledges), steer N. 10° W. or north according to the wind, until the citadel flagstaff is seen open east of Sandwich Point, bearing N. 24° W., which will lead between Litchfield and Neverfail shoals, and to Mars Rock Buoy, which leave to the westward.

Having passed Sandwich Point, steer towards George Island, keeping Chebucto Head just in sight east of Sandwich Point, until the vessel has passed close westward of the Middle Ground; then open out the head more to the eastward, so as to leave the Pleasant Shoal and Reed Rock buoys to the westward.

If passing inside George Island, the Belleisle and Leopard buoys must be left to the westward, and York Redoubt should be kept open of the wharves, in order to avoid a shoal spit, with 14 feet water, about ¼ mile to the northward of Leopard Buoy. Having passed the spit, anchorage may be selected where most convenient, either off the wharves of the city or further up off the dockyard, where the commissioners' buoy will serve to point out the Dockyard Shoal.

By Night.—Shape a course so as to pass not less than 3 miles to the southward of Sambro Island light. To insure doing so, keep in not less than 30 fathoms water, until the above light bears N. 21° W.

Having crossed the narrow bank which extends in a southerly direction from Sambro Island into deeper water, haul up to the northward until Sherbrook Tower light is seen open east of Chebucto Head, which

bearing N. 10° W., when steer for it, or so as to pass within a mile of Chebucto Head, which is steep close to. After having passed Chebucto Head, continue to steer for the light, bearing between N. 21° W. and N. 10° W.

Having passed Ives Knoll the vessel may proceed in on either side of George Island, or may anchor where convenient until daylight, according to circumstances. The light on Maugher Beach disappearing behind Ives Point will show the distance from George Island, when proceeding to the eastward of that island, through the wider—and consequently preferable—channel during a dark night.

Between Rock Head and Thrumcap Shoals.—If a NE. wind, or other circumstances, should render the passage between the Rock Head and Thrumcap shoals preferable, proceed as follows:

Having passed Devil Island, keep Graham Head open south of Devil Island the whole breadth of the island, which mark will lead to the southward of the Thrumcap Shoal and red buoy, and when George Island is seen open west of Sherbrook Tower, bearing N. 24° W., steer in on this course, until abreast the Thrumcap buoy, when proceed as before directed.

By Night.—Having made Sambro Island light, and passed Shut-in Island, steer to pass not less than ½ mile or more than one mile southward of the lights on Devil Island, steering S. 64° W. until the light on Maugher Beach bears N. 21° W., when proceed as before directed.

From the Eastward.—Having passed Devil Island, steer for Chebucto Head, and keep Sambro Island open of White Head, bearing S. 29° W., to pass southward of Rock Head and Portuguese Shoals; and when George Island is seen open west of Sherbrook Tower, bearing N. 24° W., steer in on the latter course, passing westward of the Portuguese Shoal and buoy, and between Never'ail and Thrumcap shoals. After passing the red buoy marking the latter danger, steer over for Sandwich Point, until the Roman Catholic chapel, which is the westernmost of three chapels at Dartmouth, is in line with the east point of George Island, bearing N. 19° W.; these marks will lead clear of all dangers up to George Island, which may be passed on either side, and proceed as before directed.

By Night.—Approaching from the eastward by night, and being to the westward of Jedore Ledges, steer along the land in a depth of not less than 30 fathoms, until Sambro Island light is seen; then, if it be intended to pass southward of the Rock Head and Portuguese Shoals, steer for Chebucto Head light (remembering that to clear the Rock Head the light on Sambro Island must be kept wide open south of White Head, bearing S. 29° W., and the lights on Devil Island should not bear eastward of N. 12° E.) until the light on Maugher beach bears N. 21° W., when it should be steered for on that bearing (this course leads close to the inner automatic buoy, which may be passed on either side) and when Devil Island lights are in line bearing N. 60° E., steer

to the westward until George Island lights bear N. 21° W., which will lead clear of the dangers off Maugher Beach; close to the east side of Middle Ground; and about mid-channel between Reed Rock and Ives Knoll buoy, and proceed as before directed.

Caution.—During a dark night or thick fog do not approach the Sambro Ledges within the 50-fathom line, as a depth of 40 fathoms will be found ½ mile eastward, and one mile southward of these dangers. For the remainder of the coast it would not be advisable to approach within the 40-fathom line, but it must be borne in mind that this depth may be found within the distance of 3 miles of some of the most formidable dangers between Cape Canso and Halifax; as, for instance, the Jedore Ledges.

Devil Island, composed of clay slate, is 15 feet high, ⅛ mile in length, and lies the same distance from Hartland Point, the eastern point of the main land at the entrance of the harbor. A reef connects this island with the shore, and shallow water extends from it ⅛ mile seaward.

Pilots are stationed on Devil Island.

Cole Harbor has a dangerous bar of sand, with only 3 feet at low water, which is covered with breakers whenever any sea is running. It is only during fine weather and with a smooth sea that boats can safely cross it to the entrance, which is barely 40 fathoms wide between points of shingle and sand. In this narrow entrance the depth is 3 fathoms, and the rate of the tide stream from one to 2 knots, but immediately within it the depth diminishes to 4 or 5 feet, and narrow channels—between mud flats—extend 2 miles inland.

Egg Islet is low and narrow and connected with the shore by a reef and shingle beach; shoal water extends 600 yards southward of the islet, where it terminates in 5 fathoms nearly one mile from the main shore.

Lawrenceton Lake.—The entrance of this lake—admitting boats only in fine weather—is ½ mile to the eastward of Egg Islet, and on the west side of Lawrenceton Head. This latter is a peninsula 92 feet high, composed of drift sand, clay, and bowlders, resting on clay slate, and united to the shore by long beaches of stones or shingle, the red cliffs of which form the distinguishing feature of this part of the coast.

Porter Lake.—The entrance to this lake is on the western side of Graham Head, a peninsula with red cliffs 60 feet high. The lake extends 7 miles to the northward, and has in some parts depths of 4 and 5 fathoms, but only one foot at low water in its narrow entrance.

Shut-in Shoals.—Are composed of rock, with 16 feet least water, and are extremely dangerous. The red cliffs of Seller Head seen open east of the eastern entrance point of Three Fathoms Harbor, bearing N. 13° E., leads SE., and the light-houses on Devil Island, bearing S. 86° W., leads southward of Shut-in Shoals.

Shut-in Island, of low clay-slate rock, is distant ½ mile from Graham Head, but united to it by a reef and beach of shingle. It forms the western side of the entrance to Three Fathoms Harbor.

Three Fathoms Harbor is quite open to the southward and affords shelter only to small vessels which can run into the narrow channel east of Ball Islet one mile within the entrance. The depth is there 3 fathoms, mud; but to reach it the low-water depth of 8 feet (with a 4½ feet rise) must be passed over.

Pat Shoal is a small rocky patch, with only 4½ fathoms water, bearing N. 61° E. nearly 3 miles from Shut-in Island and S. 11° E. 1½ miles from Story Head.

Codray and Round Shoals lie nearer in shore and are therefore less in the way of vessels; the least water on them is 4½ fathoms.

Chissetcook Inlet is useless to shipping, having only 3 feet at low water on the bar of the western and principal channel, which commences ½ mile within Cape Entry and continues to the head of the inlet. Both channels are very narrow, and wind through flats of sand, mud, and weeds which dry at low water.

Perpisawick Head from seaward appears like an island of pyramidal form, but from a distance of 3 or 4 miles it has the appearance of a brickwork fortification.

Perpisawick Inlet is ½ mile wide at the entrance, which is on the west side of Perpisawick Head. After crossing the bar of sand, about a mile within the entrance (on which there are only 6 feet at low water), there commences a narrow channel, between mud flats uncovered at low water, which is navigable to the head of the inlet, a direct distance of 5 miles, for any vessel that can cross the bar.

Perpisawick Shoal, of rock, with 5 fathoms water on it, bears N. 77° E. 5½ miles from Shut-in Island and S. 13° E. 2½ miles from Perpisawick Head.

Musquidoboit Shoal is composed of rock and is 1,200 yards long. The least water on it, 3 fathoms, is nearly in its center.

Musquidoboit Inlet contains many islands, and is navigable for small vessels and boats a distance of 7 miles, where it receives the waters of the Musquidoboit River. Over the bar, at the entrance of the principal channel, which is on the eastern side of the inlet, and 1¾ miles NW. from Jedore Head, a depth of 10 feet can be carried at low water; but Dunbrock Rock, with only 3 feet water on it, lies directly in the way, and renders the entrance both difficult and dangerous.

Within the bar, in a channel 250 yards wide, there is a depth of 4 fathoms between flats of sand, mud, and weeds, which uncover at low water. At about 4 miles within the bar the channel becomes very narrow, and only 7 or 8 feet deep, but small vessels and boats can ascend with the tide to the head of the inlet.

The most favorable time for a stranger to enter this inlet is at low water, when the mud flats on either side of the channel become visible.

Harbor Islet is small and stony, and from it a rocky shoal, on which are the Musquidoboit Ledges, extends upwards of a mile to the southward, and to within ½ mile of the Musquidoboit Shoal.

Tides.—At the entrance of Chissetoook, Perpisawick, and Musquidoboit Inlets it is high water, full and change, at 7h. 30m.; springs rise 4½ feet and neaps 3 feet. The ordinary rate of tidal streams in the entrance is from 2 to 3 knots.

Jedore Harbor is the first ship harbor eastward of Halifax. Its entrance is 850 yards wide from West Head to the opposite shore; but Thorn Shoal, with only 9 feet water on it, stretches out from the western shore just outside and across the entrance. The channel between this shoal and East Head is 650 yards wide between the 3-fathom lines, and carries a depth of 4 fathoms at low water over what may be termed the bar.

On the eastern side of the harbor and immediately within the entrance is Bar Point, composed of shingle and inclosing a pond; and from it Bar Shoal, a continuation of the shingle of Bar Islet, extends more than half way across to the western shore, diminishing the breadth of the channel to 200 yards, but forming no bar, the depth there being 6½ fathoms. The sandy beach of Marsh Point will be seen extending from the western shore at 1½ miles within the entrance. The anchorage is secure within this beach in 7 fathoms, over mud, and in a channel 300 yards wide; but outside the bottom is of sand, and a considerable swell rolls in with strong winds from the southward; nevertheless, the coasting schooners anchor there in fine summer weather.

The channel, between flats of mud, weeds, and mussel beds, which dry at low water, continues clear and sufficiently deep for tolerably large vessels to Bown Islands, off English Point, which separates the eastern and western arms of the harbor, 4 miles within the entrance. Anchorage can be obtained within or to the northwest of these small islands; but the entrances to the arms are nearly closed by shoals which leave only very narrow and intricate channels through which there are not more than 14 or 15 feet at low water.

The arms are navigable, for any vessel that can enter them, nearly to their heads, including Salmon Inlet to the rapids at the entrance of Salmon River which is 2 miles above the long wooden bridge which crosses the entrance of the inlet 1½ miles up the eastern arm.

Supplies.—The scattered population along the shores of Jedore Harbor could afford only a very limited supply of fresh provisions to shipping. Water may be obtained from a small stream near Blakeley Cove, on the western shore, 3½ miles within the entrance.

Jedore Head attains an elevation of 200 feet, on the western side of the head are cliffs of red clay 70 feet high, and on its SE. side stands Jedore cliffs, also of red clay, and forming an excellent landmark which attains an elevation of 135 feet.

Dangers off the entrance.—To render Jedore Harbor, with its narrow and crooked channel, easy of access, buoys would be required on Thorn and Bar Shoals; meanwhile, the following description of the

dangers and directions for their avoidance will enable the intelligent seaman to use it as a harbor of refuge in case of necessity.

Jedore Rock of clay-slate and 50 feet high, has a rocky ledge extending 300 yards from its western end. It bears from Jedore Head S. 71° E 1½ miles, the passage between being clear, with the exception of some patches of 5 and 6 fathoms, on which, however, the sea very rarely breaks.

Arnold Rock dries at low water, and can almost always be seen; to pass westward of it, as well as Arnold Shoal, which lies ¾ mile farther to the southward, with 6 fathoms on it, the harbor's mouth must be kept open westward of Jedore Rock.

Old Man is a small rock 12 feet high, and lies with the center of Jedore Rock in line with Jedore Head. It is steep-to on the eastern side, but a small sunken rock, with only 4 feet water, lies 200 yards from it S. 12° W.; the passage is clear between it and Arnold and Jedore Rocks. There is also a clear passage between Old Man and Mehanny Rocks, some of which are dry at low water, and bear from Old Man N. 35° E. ¾ mile; and beyond them in the same direction Gull Rock, together with Barren and Roger Islands, will be seen.

Macdonald Rock, with 12 feet water, bears S. 69° W. 1⅛ miles from the south point of Long Island.

Inner Pollock is ½ a mile in extent north and south, having 7 fathoms on its south end, and the least water, 5½ fathoms, near its northern extremity; from it Jedore Rock (in line with the eastern extremity of Jedore Cliff) bears N. 32° W. 3 miles, and Egg Island N. 58° E. 5⅛ miles.

Outer Pollock has 6 fathoms on it, and lies nearly a mile farther off on the same line of bearing from Jedore Rock, and with Egg Island bearing N. 50° E. 5½ miles.

East Pollock is a small patch of 7 fathoms, with deep water all around. Jedore Cliff seen open westward of Jedore Rock, leads westward of the Pollocks.

Hopkin Rock has 11 feet water, and from it Old Man (with the breakers on Arnold Rock seen just open to the southward of it) bears S. 63° W. 1⅞ miles. Both these rocks are very small, with deep water all around them, and break only in heavy weather.

Southwest Ledges are three rocky patches, which dry at low water, and cover a space 600 yards long in a S. 30° W. direction. From the northeasternmost ledge the south point of Long Island bears N. 7° E. 1⅛ miles, and the passage is clear between them. The southwesternmost ledge is covered only during spring tides, and can therefore almost always be seen.

Bull Rock, bearing S. 63° E. 1,250 yards from the last-named danger, is one of the most dangerous of the ledges, having only a depth of 5 feet over it at low water; during high tides it is marked by breakers, but only when a heavy sea is running. From it the south end of

Long Island bears N. 7° W. 1¾ miles, and Egg Island N. 47° E. 2 miles.

Bull Shoal, with 3 fathoms water, bears S. 21° E. nearly ⅔ mile from the southwesternmost of the Southwest Ledges. From it Old Man, Jedore Rock, and Jedore Head are nearly in line, bearing N. 70° W. It rarely breaks, and is therefore extremely dangerous.

Brig Rock has only 3 feet at low water, when its position is usually marked by a breaker. Egg Island bears from it N. 55° E. 3¾ miles; Old Man Rock, on with the center of Jedore Cliff, bears N. 52° W. about 3 miles.

Bell Buoy.—A bell buoy, surmounted by a staff and cage, and colored red, is moored 500 yards southward of Brig Rock.

Brig Shoal, with 5 fathoms on it, bears S. 55° E. 800 yards from the Brig Rock; from it Bull Shoal, Bull Rock, and the south side of Egg Island are nearly in line, bearing N. 49° E. This shoal is dangerous after very heavy gales, when it is said to break at irregular intervals.

Mark.—The eastern extremity of Jedore Cliff in line with Old Man Rock, bearing about N. 46° W. leads 800 yards westward of Brig Rock and Shoal and between them and the East Pollock.

Directions.—Approaching the anchorage in Jedore Harbor from the westward, pass midway, or nearly so, between Jedore Head and Jedore Rock, so as to keep outside Thorn Shoal, until the steep bank (not the sand beach) of Marsh Point touches the shingle beach of Bar Point, bearing N. 4° W. Steer with the above marks on, until Roger Island touches east head, bearing S. 77° E.; then steer N. 32° W. to clear Bar Shoal.

When from 200 to 300 yards from the shingle beach on the western shore of the harbor, steer along the shore to the northward and eastward, until abreast the sand beach of Marsh Point, which must be rounded to the northward at the distance of 200 yards and anchor between it and Pea Point on the opposite shore, in about 7 fathoms, over muddy bottom. At or near low water, when a part of the Bar Shoal is shown by breakers, and the steep mud flats are visible on either side of the channel, is the most favorable time for entering this harbor.

In approaching the harbor from the southward, the harbor's mouth should be seen between Old Man and Jedore Rocks, or the whole of Jedore Cliff should be open westward of Jedore Rock, to pass westward of Pollocks, on which, however, no less than 5½ fathoms could be found. Leaving Arnold and Jedore Rocks to the westward, pass midway between them and Old Man Rock, taking care to avoid the sunken rock off the latter; or, if preferred, pass eastward of Old Man Rock, which, is steep-to on that side, and when approaching the harbor's mouth proceed as before directed.

Caution.—Vessels proceeding along this part of the coast should pass outside all the Jedore Ledges, and at night, or during foggy weather, should not approach within the depth of 40 fathoms, for the soundings are deep and very irregular near them all.

Tides.—At Arnold Cove, 2½ miles within the entrance of Jedore Harbor, the streams change almost immediately after high and low water, and do not exceed the rate of 2 knots. In the entrance of the harbor the times will be a few minutes earlier, the rise 2 feet less, and the ordinary rate of the streams one knot. The in-draft of the flood tide is felt several miles off this harbor, and off the inlets westward of it.

Clam Bay.—Immediately to the eastward of Jedore Harbor are Roger and Barren Islands. Outside these islands are Gull and Mehanny Rocks, and to the eastward of them Middle Rock, Spritsail, Sister, North Sister, and Siteman Rocks, Duck Island, with its ledges, rocks, and shoals; and the Sugar Loaf and Goose Island, with its ledges. These all lie across Clam Bay, which affords no safe anchorage, and as they are out of the way of shipping, the seaman is referred to the chart for their relative positions. Long Island, ¾ mile in length, 50 feet high, and bearing from the east head of Jedore Harbor S. 77° E. 4 miles, may be easily distinguished.

Barse Rock and Hurley Shoal on which the sea breaks during heavy gales are small rocky patches with 4 fathoms on them and deep water all round. These shoals bear from Bald Rock, nearly S. 10° E. 2½ miles, and S. 32° E. 2¼ miles respectively; and lie directly in the way of vessels proceeding along the coast.

Flint Ledge, about 10 feet above high water level, lies N. 10° W. ⅞ mile from Egg Island, the channel between being clear, with the exception of Passage Rock, which, however, has 4¾ fathoms on it.

Between Flint Ledge and the south point of Long Island, are Tomfool Shoals, with 3 fathoms water over them; and within these are Stoddart and Goose Ledges, lying off the entrances of Clam and Little Harbors, which admit only small craft and boats.

Egg Island is of rock, 40 feet high, and is the outermost of the numerous islands off this part of the coast. On a rock near Egg Island stands a conspicuous red building.

Pyche and Grizzle Rocks.—Outside Egg Island, at the distance of ¼ mile to the southward, are the Transport Ledges, always above water, as well as the more dangerous Pyche Rock with only 3 fathoms water; it lies with Jedore Rock and Egg Island in line bearing S. 89° W., and is ¾ mile from the latter island. The Grizzle Rock, having 4 fathoms on it, lies with the northeast points of Egg and Long Islands, in line bearing N. 55° W., and is distant from the former island a little more than ½ mile.

Bald Rock, about 8 feet above high water, is of small extent, and Egg Island bears from it S. 65° W., 2½ miles. It is bold on the north and south sides, but there is a sunken rock, with only 6 feet water, bearing from it S. 58° W. ¼ mile.

Owl Head Bay has a remarkable round mound and cliff at its extremity, and is the most prominent point on the western shore of the bay, 1¼ miles within the entrance. The anchorage has the advantage of

being open and free from ice all the winter, and the best berth for a vessel of moderate draft of water is with the east extreme of Shag Island touching Cable Point; and Owl Head S. 31° E. This will place a vessel in 24 feet low water springs, with good holding ground of sandy mud.

Directions.—The greatest danger to be avoided in entering this bay is Owl Rock, which lies on the eastern side of the channel, with only 9 feet water, and bears from the south point of Friar Island N. 71° W. ¾ mile. The peninsula of Wisdom Point (at the head of the bay) apparently touching Cable Point, bearing N. 42° W., leads clear to the westward of it, and also of the reef which extends 700 yards SW. from Friar Island, and which can almost always be seen.

Supplies.—Wood may be obtained anywhere round the bay, and water, fresh provisions, and a few vegetables from the settlement at Palmer Cove.

False Passage, between Nichol and Cable Islands, on the eastern side of the bay, is only fit for boats or small craft, 4 feet being all that can be carried through at low water.

Ship Harbor.—The approaches to the harbor are comparatively bold and steep, and lie between Charles and Nichol Islands, of gneiss, and barren; they are amongst the largest on the coast, but in no part do they exceed an elevation of 100 feet above the sea.

The space between Nichol Island on the western side and the mainland is almost completely occupied by islands and shoals, which afford shelter to Day Cove, where secure anchorage for small vessels may be obtained in less than 4 fathoms, in which position they will be out of the swell that rolls in after heavy southerly gales.

The western shore of Ship Harbor is well settled, and so also is the eastern shore as far in as Salmon Point, for the hills of drift sand and clay which attain an elevation of more than 200 feet, though abounding in bowlders, afford a sufficiency of hay and vegetables for the support of cattle and sheep.

The northeastern shore within Newcombe Brook is barren, the hills being bare and the extreme height 240 feet. Little River flows into the head of the harbor at 5 miles from the entrance, and near it, on the western side, a larger and rapid stream discharges the waters of Ship Harbor Lake. A Roman Catholic chapel stands on the western shore at 1¼ miles within the entrance, and an English Episcopal church 1⅛ miles farther in on the same side.

Supplies.—The best watering place is a rapid brook on the eastern shore, about ½ mile within Salmon Point. Supplies of fresh provisions may be obtained.

Dangers on Western Side.—In approaching the harbor the principal dangers lie outside the islands off its entrance. Friar Island and Friar Ledges lie on the western side, and off them Flat Ledge, always above water, from which West Bull Rock, with only a fathom water on

it, bears S. 55° W. ¼ mile, and East Bull Rock, with 4 fathoms on it, N. 71° E. 350 yards. Egg Island light-house, seen over Bald Rock, bearing S. 65° W., leads nearly ½ mile to the southward of these dangers.

There is also the Middle Ground, with 4 fathoms water, bearing from Flat Ledge N. 47° E. 1,200 yards, and the more dangerous NE. shoal, with 2½ fathoms water, bearing from the eastern end of Friar Ledge N. 35° E. distant 900 yards, and from Bear Rock S. 58° W. ¾ mile. Farther in, the rocks and shallow water off the eastern side of Nichol Island, including Pot Rock with 4 fathoms on it, will be avoided if Wolf Point (the high northeastern extremity of Nichol Island) be not brought to bear to the northward of N. 47° W.

Outlying Dangers.—Little Rock, with 4 fathoms, bearing from Flat Ledge S. 43° E. about 2 miles; Broad Breaker, with 4 fathoms, bearing from Charles Point S. 34° E. 1½ miles; Silver Shoal, with 5 fathoms, lies from Charles Point S. 57° E. 3¾ miles, and from the SE. point of Outer Island S. 22° E. 2¾ miles. On all the above shoals the sea breaks occasionally after heavy gales.

Bull Rock, with 4 feet water, bears from Charles Point (the south extremity of Charles Island) S. 63° E. 1,200 yards, and, together with numerous other rocks above and under water, will be cleared on the south side by keeping Long Point (the southern extremity of Nichol Island) open south of Bear Rock, bearing S. 75° W. The mark that leads clear to the westward of these dangers, including the ledges farther in off the Western Islands, is Ship Rock seen over Bald Island, and in line with Tucker Point bearing N. 38° W.

Bear Rock, which is small, rises 4 feet above high water, and is quite bold on the eastern side; but a reef, mostly dry at low water, extends from it 300 yards to the westward. It lies nearly in the middle of the entrance between the islands, with a clear channel on either side.

From the Westward.—In approaching Ship Harbor from the westward, Ship Rock (which gives its name to the harbor) may be easily recognized, being a remarkable cliff of clay slate, 70 feet high, on one of the islands on the eastern side of the passage, and a mile within Charles Island. When seen from a distance at sea the cliff resembles a ship under sail, and, together with the western extremities of Bald Island and Tucker Point, forms the leading mark for passing on either side of Bear Rock.

Entering the harbor with the wind from the westward, proceed as follows: To clear the East and West Bulls, steer to the eastward with Egg Island light-house and Bald Rock in line, or pass outside Flat Ledge (which can always be seen) at the distance of a third of a mile or more, and when Ship Rock comes in line with the western point of Bald Island, bearing N. 27° W., steer in with this mark on, between the NE. shoal and the reef off Bear Rock. Having passed the latter, steer so as to pass midway between Wolf Point and Bald Island (from

either of which the shallow water does not extend beyond 60 fathoms), and thence for the harbor's mouth.

Having arrived abreast Passage Island, steer to the westward towards Day Cove, until the house on Eisan Point is in line with the NE. point of Caroline Island, and seen over the small shingle islet off Salmon Point, and appearing nearly to touch the clay cliff of the latter, bearing N. 47° W. Keep these marks exactly in line, and they will lead in past Black Rock (which lies outside Black Point on the eastern side of the entrance), and O'Brien Reef, which lies ½ mile further in, and also on the eastern side of the narrow channel.

After passing between O'Brien Reef and Beach Point, of shingle (where the channel between the 3 fathoms line is only 70 fathoms wide), steer more to the westward and anchor midway between Salmon Point and the western shore in 7 fathoms, or anywhere between Salmon Point and Whale Island in 4, 5, or 6 fathoms, the bottom being of mud and the shelter complete. Caroline Island lies over on the western side of the harbor, a mile within Beach Point, and may be easily recognized by a round wooded hill, 190 feet high, near its NE. point.

Tides.—The winds cause great irregularities both in the times and rise. The ordinary rate of the tidal streams does not exceed one knot; but after heavy rains or the melting of winter snow, as well as after strong southeasterly gales that have driven the water into the harbor, the ebbing stream is said to be much stronger.

Shoal Bay is sufficiently wide for large vessels to work in and out of with ease, and possesses a good depth of water and excellent anchorage.

Supplies.—The head of Shoal Bay is well settled, the hills of red clay affording a productive soil, but the islands are almost everywhere barren. Supplies of fresh provisions, wood, and water may be obtained.

Anchorage.—Vessels should anchor in Shoal Bay, with Borgle Bluff and Outer Island in line, bearing S. 69° E., either midway between the Middle Ground and the north point of Charles Island in 5½ fathoms, sand, when Round Islet (in line with Tucker Point) should bear S. 4° W., distant 400 yards.

Directions.—The dangers on the west side of the bay, namely, the ledges off Charles Point and Borgle Shoal, may be avoided by keeping the red clay cliff at the head of the bay open of Borgle Bluff, bearing N. 41° W. After passing Borgle Bluff the Middle Ground will be avoided by not bringing Borgle Bluff to the eastward of S. 54° E. until the south sides of Mary and Tuff Islands are in line, bearing N. 66° E., or until Hardwood Island appears through the Tickle.

From this position steer to the westward and anchor on the line of Borgle Bluff and Outer Island, apparently touching, bearing S. 70° E., with the whole of Hardwood Island seen through the Tickle, bearing S. 47° W., and in 4½ fathoms, over mud. This anchorage is safe, although some swell may roll in during or after heavy SE. gales. On

the eastern side Net Shoal, which has 3 fathoms of water on it, and Eve Ledge, the only other danger in the way (always visible), may be avoided by keeping the red cliff open to the westward of Mary Island, bearing N. 52° W.

Tangier Harbor, next west of Pope Harbor, is separated from the latter by a narrow peninsula about 2 miles long. The entrance to Tangier Harbor is not easily recognized from seaward, as the land is low and devoid of any remarkable features, and Tangier Island partly fronts it. Between Tangier Island and Sandy Cove Point the passage is narrowed to 500 yards by a small patch of 18 feet lying northward of the island. Mason Cove, in the NE. part of the harbor, 2½ miles from the entrance, is landlocked, and has depths of from 12 to 15 feet water over muddy bottom.

Supplies.—Around the head of Tangier Harbor, and also on the point of the main land that separates it from Pope Harbor, there are tracts of tolerably good pasture land, from which, together with fishing and coasting, the inhabitants derive a comfortable subsistence. Water may be obtained from Tangier River at the head of the harbor.

The Mouseback Shoal extends to the southward ½ mile from Outer Island, south of Tangier Island. Sandy Cove Point, in line with Hog Island Point and with the east side of Tangier River, bearing N. 46° W., leads clear of it.

Sandy Cove Shoal, with 15 feet water over it, lies on the eastern side; farther north, in the center of the harbor, about 800 yards NW. from Porcupine Point, is the Whaleback Rocky Shoal, which only shows at low-water springs; and at the same distance to the NW. from its shoalest part, is Shag Ledge, always above water. The best channel is on the eastern side of the Whaleback Shoal and Shag Ledge.

Anchorage.—The best and most secure berth is in Mason Cove, but a more roomy anchorage will be found eastward of the Shag Ledge, where the depths are from 20 to 23 feet, and the bottom in most places mud.

Directions.—In running for Tangier Harbor, which should only be done in clear weather, do not approach the shore nearer than 3 miles, until the entrance is open, and Porcupine Hill on its eastern side bears N. 32° W. Then steer for Sandy Cove Point, keeping Ironbound Ledge open on passing it to avoid Sandy Cove Shoal. When Porcupine Head bears about N. 35° E. steer N. 10° W. until the south end of Sandy Cove Beach is in line with Porcupine Head, then with these marks on steer N. 44° W., which will clear the Whaleback Shoal and Shag Ledge. When northward of the latter a vessel may steer gradually round Hog Island Point, giving it a small berth for Mason Cove.

Pope Harbor has a depth of water sufficient for vessels of heavy draft, but it is only secure within Harbor Island, where the space with deep water being little more than 200 yards across, it would be necessary to moor. In the bay outside a heavy swell rolls in during southerly gales.

Supplies.—The shores of Pope and Spry Harbor, as well as Taylor Bay, are more thickly peopled than usual on this coast. There are extensive tracts of hardwood land in the vicinity, furnishing timber for shipbuilding, and supplies of fresh provisions and water may be readily obtained.

Horse Rock, with only 4 feet water, lies the farthest out, and from it Pope Rock is in line with the east end of Ironbound Island, bearing N. 52° W.

Pope Rock and Shoals.—Pope Shoals, which are exceedingly dangerous, extend more than half way out from Pope Rock towards Horse Rock, and the soundings are rocky and irregular throughout the remaining distance. Pope Rock is above water and distant ¾ mile from Ironbound Island, but the passage between them is rendered impassable to strangers by sunken rocks, and so also is the passage between the island and the main.

Schooner Rock, with only 6 feet water, lies ¼ mile out from the islets at the entrance of Shelter Cove, in which the fishing schooners lie landlocked in 2 or 3 fathoms at low water. Black Rock lies ⅓ mile further in on the western side, and is always above water.

Tides.—It is high water in Pope Harbor, full and change, at 7 h. 40 m.; springs rise 6½ feet, and neaps 4½ feet, but strong winds cause great irregularities. The tidal streams are weak and irregular.

Directions.—When not less than 2½ miles from the Outer Islands bring the Episcopal Church steeple in line with Gerard Head bearing N. 42° W., and these marks will lead in between Phœnix Island and Pope Shoals. As soon as Pope and Taylor Heads are in line bearing N. 74° E. alter course to N. 57° W., and it will lead midway between the reef off Gerard Head and Schooner Rock, and when the two western points of Harbor Island are in line, bearing N. 38° W. (when they should also be in line with the Roman Catholic chapel, which is not easily distinguished), alter course to N. 49° W. (for the head of the harbor, so as to pass midway between Harbor Island and Grum Point), until the channel through the harbor and to the northward of Gerard Island begins to open.

Then steer N. 13° E., or for the church steeple, until the points of Long Island on the northern side of the harbor are in line, bearing N. 60° E. which will lead to the anchorage midway between Bollong Point and the NE. point of Harbor Island, in 4½ fathoms, mud. Should the wind be from the eastward, the vessel may anchor outside on the last-named leading marks, and in 6¾ fathoms muddy bottom, and may either wait for a fair wind, or warp into the harbor.

Spry Bay.—Taylor Head is the outer extremity of a narrow peninsula which divides Mushaboon and Spry Harbors; it is destitute of trees, but being composed of large white rocks is distinguishable afar off. Spry Harbor, situated at the NW. end of Spry Bay, is suffi-

ciently commodious to accommodate a large number of vessels; in 7 or 8 fathoms, mud, secure from all winds.

Redman Shoal lies with Taylor Head, the eastern point of the bay, bearing N. 26° E., $1\frac{4}{10}$ miles; and Lawler Point (which is an islet at high water), on the eastern side of Gerard Island, is seen just open eastward of Maloney Rock, bearing N. 38° W. The fishermen report the least water on this shoal to be 5 fathoms, nor could any less be found by the officers engaged in the Admiralty survey.

Mad Moll Reef extends in a westerly direction nearly a mile from Taylor Head. On it there are two patches of shingle, which are always above water; and to the northward of it two rocky patches nearly dry at low water.

Herring and Maloney Shoals.—The latter, of considerable extent, with 12 feet water, is by far the most in the way. Its bearing from Maloney Rock, which is always above water, is S. 5° E., and distance from $\frac{1}{2}$ to $\frac{2}{3}$ mile. The southern extremity of the dry shingle on Mad Moll Reef in line with Taylor Head, bearing N. 60° E., leads $\frac{1}{4}$ mile southward; and Bald Rock, seen just open eastward of Maloney Rock, bearing N. 14° W., leads eastward of these shoals.

Neverfail Shoal, with 17 feet water, lies N. 74° E., $\frac{1}{4}$ mile from Maloney Rock; and from it Tomlees Head and Leslie Island appear touching, N. 16° W.

Directions for Eastern Channel.—Pass westward of Redman Shoal and Mad Moll Reef, and between the latter and Neverfail Shoal, by keeping the eastern side of Tomlees Head only just shut in behind the high bank on the eastern side of Leslie Island, bearing N. 20° W. Steer with this mark until Maloney Rock and Pope Head are in line, bearing S. 58° W.; then alter course to N. 38° W. for the western side of Tomlees Head, and having passed between Bald and Ram Rocks, steer to the westward round the northern end of Gerard Island, from which the shallow water does not extend beyond 300 yards, and anchor in 7 or 8 fathoms, mud, with Taylor Head shut in behind the NE. point of Gerard Island.

Mushaboon Harbor scarcely deserves to be ranked as a harbor, as it is exposed to the full force of SE. winds. It affords indifferent shelter to vessels only on the eastern side near its head, where Gull Rock and the shoals which nearly unite it to Malagash Island break off the sea.

Directions.—As the harbors immediately adjoining Mushaboon to the east and west are so superior to it, vessels seldom require to enter this exposed anchorage; but should any wish to do so, the safest course for a stranger to pursue will be to steer with either of the leading marks for Sheet Harbor on until Bob Bluff is seen well open north of Pyche Island, bearing N. 55° W.; thence steer for the bluff on this bearing, which will lead well to the eastward of the Pyche Shoals, and vessels may run up the middle of the bay, steering N. 50° W. for Yellow Rock, the channel between the dangers on either side being $\frac{1}{2}$ mile wide.

On nearing Gull and Yellow Rocks a vessel may either pass between them, disregarding the rock with 4 fathoms at low water, or, passing to the westward of Yellow Rock, may steer to the eastward towards Botelier Island and anchor off it, northward of Gull Rock, in 6 fathoms, mud.

Sheet Harbor, one of the finest on the coast, derives its name from Sheet Rock, a small islet outside the entrance, which presents to seaward a remarkable cliff of clay slate, resembling a suspended sheet. The entrance between Western and Danberry Islands is ⅛ mile wide, and the anchorage immediately within it on the western side is quite safe, and sufficiently commodious to accommodate a large number of vessels.

The harbor is of considerable extent, extending inland 6½ miles, and is navigable for vessels nearly to its head. There is a mill at the head of the NW. and principal arm, the shores of which are well settled. There is also a scanty population along the NE. arm and eastern shore of the harbor; but the western shore, from Mitchell Point to Mushaboon Harbor, is uninhabited.

Supplies.—Water may be obtained in Sheet Harbor, either from Watering Cove on the west side, or Smelt Brook on the opposite shore. A moderate supply of fresh provisions and abundance of fire-wood may also be procured from the inhabitants, who derive subsistence from ship-building, coasting, and farming.

Buoy.—An automatic whistling buoy, painted black and red in vertical stripes, is moored in 24 fathoms, with Sheet Rock lighthouse bearing N. 5° W., distant 5⅛ miles.

Pyche Shoals.—The dangers on the western side of the entrance to Sheet Harbor are rocky patches of 3½ and 4 fathoms off Taylor Head, and also the more dangerous Pyche Shoals, which are separated from Pyche Island by a narrow channel leading to the entrance of Mushaboon Harbor. The least water on these shoals, 17 feet, and their SE. point, distant about a mile from the island, is cleared by the east points of Guilford and Western Islands in line, bearing N. 9° E.

Yankee Jack, a small rocky shoal with only 3 feet water, bears from Taylor Head, S. 51° E., 2½ miles. At the distance of ¼ mile westward, there is another rock with 12 feet water.

Taylor Goose.—This dangerous rock, awash at high water, bears from Taylor Head S. 47° E., 1⅞ miles. Vessels may pass SE. of it at the distance of 200 yards, but in the opposite direction the shoal extends ¼ mile, and is just cleared on the west side by the east points of Guilford and Western Islands in line, bearing N. 9° E.

Mushaboon Shoal, a small rocky patch with 3 fathoms water, bears from Taylor Head S. 72° E., 1½ miles. As the position of this rock is seldom shown by a breaker, it is exceedingly dangerous.

From Logan Rock, which is seldom marked by a breaker, Yankee Jack (on the opposite side of the channel) bears S. 82° W., the passage between them being nearly 1½ miles wide.

Geddes Shoal, with 5 fathoms on it, is the outermost of the off-lying patches on the eastern side of the entrance. From it the eastern extremity of Western Shagroost is in line with Fishery Point, bearing N. 2° E., distant about 2¼ miles; and Sheet Rock appears in the entrance of the harbor, between Western and Danberry Islands, bearing N. 22° W., and distant about 4¾ miles. The sea breaks over this rocky shoal only after heavy gales.

Monroe Rock, with 12 feet water, lies with the western points of Western Shagroost and Sheet Rock in line. Pumpkin and Horse Islands apparently touching, bearing N. 38° E., leads ¼ mile south of this rock, and close to the southward of Geddes Shoal.

Western Shagroost, 6 feet above high water, can always be seen. A reef partially dry, extends ⅜ mile from it in a S. 28° W. direction, and has only 4 feet on its SW. extremity. To the northward of the rock is the dangerous Babin Shoal, the least water on which 2½ fathoms, bears from the Western Shagroost N. 47° W. 1¼ miles, and from Fishery Point (nearly in line with the southern extremities of Hardwood and Mink Islands) S. 43° W. 1½ miles.

Eastern Shagroost is a low rocky ledge barely 5 feet above high water, with breaking rocky shoals on its north and west sides, but steep-to on its SW. side.

Pumpkin Island is a steep rounded islet 90 feet high, bare of trees, lying west 1¾ miles from the lighthouse on Beaver Island; rocky ledges extend nearly ½ mile from its south point.

Macdonald Shoals, the outermost patch of which, with 12 feet water, bears from Macdonald Point S. 43° W. ¾ mile. The mark which just clears the western extremities of Macdonald and Babin Shoals, as well as the reef off the Western Shagroost, is Sheet Rock, apparently touching the east point of Western Island, bearing N. 26° W.

Tides.—Strong winds cause great irregularities, especially in the rise. The diurnal inequality is most distinctly shown in the low waters, in this and all the harbors that have been surveyed on this coast, including Halifax. The ordinary rate of the tidal streams does not exceed half a knot; but it is said to be stronger after heavy rains or the melting of the winter's snow, or after long continued southerly gales, which have previously forced the water into the harbor. It is high water about a quarter of an hour earlier in the entrance of the harbor, where the rise is about 2 feet less.

Western Passage.—Proceeding for Sheet Harbor by the westernmost passage, westward of Taylor Goose and Mushaboon Shoals, and between them and the Pyche Shoals, bring Sheet Rock to apparently touch the east point of Danberry Island, bearing N. 20° E., and steer with this mark on until Bob Bluff opens out north of Pyche Island, when the Pyche shoals will have been passed, and the vessel may be kept a little to the eastward, so as to give a wider berth to the reefs off Guilford Island, which the above marks only just clear.

Directions.—If a vessel be bound up Sheet Harbor, the first danger to be avoided is White Rock, which dries at low water, and is distant 900 yards from Danberry Island, the west point of which, apparently touching Sheet Rock, bearing S. 5° E., leads just clear westward of White Rock. Sheet Rock should therefore be kept open to the westward of Danberry Island until past this rock; then steer to the eastward, so as to bring the western points of Danberry Island and Sheet Rock in line, bearing S. 3° W., and steer N. 3° E., or so as to keep those marks on astern, until nearly abreast Slab Point, on the western shore, 2 miles within the entrance. Then, as those marks barely clear Slab Shoal, steer a little to the eastward until it is passed, observing that the passage between it and the reef, which extends 300 yards from Salmon Island, is only 400 yards wide.

Having passed Slab Shoal, keep towards the western shore rounding Olding Point at a distance not exceeding 300 yards to avoid the shoal off the shingle of Watt Point, and anchor off Watering Cove on the western shore in 7 fathoms, mud, with the chapel at the head of the Northwest Arm appearing nearly midway between Mitchell and Church Points. The vessel will here be landlocked, and secure in all winds.

On the navigation of the Arms the services of a pilot would be indispensable.

Middle Passage.—To pass between Yankee Jack and Logan Rock, which is the widest passage, steer with Sheet Rock apparently touching the western point of Danberry Island, bearing N. 5° W., until the SW. point of Guilford Island bears N. 61° W., when the southern point of Salisbury Island will have disappeared behind it; then steer to the northward and westward, until the west ends of Danberry Island and Sheet Rock are in line, in order to clear the 28-foot shoal which the former marks lead over, and pass to the westward of Sheet Rock.

Beaver Island.—Beaver Island, 40 feet high, is partially covered with scrubby trees, and its slate cliffs show white to seaward. On its north side, in moderate weather, landing can be safely effected at a small cove near the east end; and in bad weather boats may be saved at high water by entering the gully, which separates the two parts of the island.

Beaver Harbor.—Notwithstanding the numerous dangers which fringe the coast in the vicinity of this harbor, it is easy of access after Beaver Island lighthouse has been identified, in consequence of the entrance channel being straight and deep, after passing 400 yards eastward of Beaver Island. The position of this harbor is objectionable during heavy southerly winds, but under all other circumstances it affords an excellent refuge.

The Beaver Harbor of the fishermen is a small cove situated NW. one mile from Beaver Point. It affords excellent shelter, being protected by a reef of stones, partly dry at low water, springs, and by a

spit of sand and shingle extending half way across its entrance, within which small vessels may lie secure from all winds.

Salmon River, at the bridge, affords good fresh water.

Supplies.—The inhabitants along the shores of Beaver Harbor reside principally at the cove on its west side and at Salmon River. Firewood and a limited supply of fresh provisions may be generally obtained at moderate prices.

William Shoal, with 3 fathoms water, and only breaking occasionally, is the principal danger to be avoided in approaching Beaver Island lighthouse. It will be cleared, when nearing it from the southward, by keeping the conical hill on Sutherland Island open east of Beaver Island.

Marmot Rock, the outermost danger on the east side of the channel leading to Beaver Harbor, is only awash at low water, springs, and with the prevalent SW. winds it seldom breaks.

Middle Shoal has 2½ fathoms water on it, and two 4-fathom patches lying to the southward.

Sutherland Island, on the west side of the channel into Beaver Harbor, is wood, with cliffs of slate, and has on it a conical-shaped hill 107 feet high.

Harbor Rock, of bare slate, 12 feet high, lies on the eastern side of the channel into Beaver Harbor, and has shoal water extending 200 yards to the westward.

Sandy Islet has a red clay bank, 12 feet high, at its south end; between it and Harbor rock the ground is broken and rocky.

Rocky and Hardwood Islands lie on each side of the entrance to the Salmon River anchorage. The former has a rock, with only 5 feet water lying off its eastern end; the latter is bold-to, and has red clay banks.

Balcom Shoal, with 10 feet water, lies in the middle of the passage between Rocky and Hardwood Islands, and narrows the available channel into Salmon River anchorage to less than 200 yards; but to reach this anchorage local knowledge is necessary.

Directions.—In approaching Beaver Harbor from the southward by day, when about 5 or 6 miles from Beaver Island bring the lighthouse to bear N. 50° W. and steer in N. 42° W., observing that in passing the end of Beaver and Horse Islands the dark-wooded Beaver Point is open to the eastward of Sutherland Island. After passing 200 yards to the eastward of Sutherland Island and Beaver Point, keep the lighthouse in sight astern, open eastward of Sutherland Island; on this line, with the cross mark of Quoddy Hill in line with the south end of Hardwood Island, fair anchorage can be obtained in 7 fathoms, muddy bottom.

Anchorage.—If, however, better shelter be desired, a pilot should be procured, and the vessel run into Salmon River anchorage or Macleod Cove. Into the latter a depth of 21 feet may be carried, and a landlocked berth obtained in the same depth over muddy bottom.

Newtonquoddy, an inlet to the eastward of Beaver Harbor, will admit schooners of small tonnage; but is not much frequented, even by small vessels, on account of the numerous rocky islets and shoals overlying its entrance.

Directions.—The anchorages under Brokenback Island and in Nicomtau Bay are not recommended, but they may prove useful in cases of emergency. Approaching the anchorage under Brokenback Island from the eastward or westward, do not pass to the northward of the line between the Bassoon Reefs and White Islands, until Baptiste Island (of red clay banks, 70 feet high, and partly wooded) is seen east of Brokenback Island. When the highest part of Baptiste Island is in line with the east end of Brokenback Island, bearing N. 56° W. (which mark leads to the eastward of the Snapper Shoal), steer on that line of bearing, and giving Brokenback Island a berth of less than 200 yards, anchor in 10 fathoms, sand, with the Bird Islands open west of Brokenback Island, and the northern Halibut Island just open south of Gold Island.

To enter Nicomtau Bay, steer in with Harbor Rock (of slate, 30 feet high, and nearly bare of trees) in line with the high land on the eastern side of Moser River bearing N. 15° W. In passing to the westward of the Halibut Islands be careful that the west end of Hartlin Island is well open of Goose Island, in order to clear Salamander Rock, with only a foot on it. After clearing Salamander Rock, steer so as to pass 200 yards eastward of Harbor Rock, and westward of the Bull Rock, which uncovers at low water, and anchor in about 6 fathoms, mud, northward of Hartlin Island.

In clear weather Pumpkin Island may be seen distinctly when off White Islands; and by keeping it just open north of Beaver Island lighthouse, bearing S. 79° W., it will lead to the southward of all these shoals. If not made out, White Islands should not be approached nearer than 2 miles.

Nicomtau Bay, the outlet of Moser River, a small stream admitting schooners of light draft, is the abode of a few families who cultivate small farms, and during the summer months frequent the Halibut and White Islands for the purpose of fishing.

Halibut Islands are a cluster of islands a mile in extent and 35 feet high, lying to the northwest of White Islands.

Bassoon Reefs, an extensive cluster of shoals, lying 2½ miles to the SW. of Halibut Islands, are composed of large rounded stones, and are partially uncovered at low water. They generally break heavily; but as at high water, springs, with the wind off shore, their position is not easily recognized, it will be well to take care that Pumpkin Island does not show open northward of Brother Islands. This mark will lead ½ mile southward of the reefs.

Bird Islands, low and without trees, lie 2 miles to the NW. of the Bassoon Reefs.

Bowen Ledge is a bare flat slaty rock 8 feet high, lying ½ mile from the low west point of Camp Island.

Horse Shoe Shoal, with 3 fathoms water on it, lies south nearly 1½ miles from the center of the larger White Island. The west end of Halibut Islands kept open west of Bowen Ledge, leads SW. of it.

David Shoal, with 4 fathoms on it, lies N. 22° W. ½ mile from the Horse Shoe Shoal.

Lockwood Rock, with 3 fathoms on it, lies with the highest part of Tuffin Island seen over the east point of White Island, bearing N. 55° W., and is distant rather more than 2 miles from the latter. The whole of Tuffin Island open east of White Island will lead eastward; and the east ends of Tuffin and White Islands in line will lead westward of the rock.

White Islands, which derive their name from cliffs of slate of highly inclined strata, showing white to seaward, are wooded, and attain an elevation of 80 feet at their eastern extreme. They are the outermost of a group of islands and rocks, lying off the point separating Nicumcigum Inlet from Nicomtau Bay.

Nicumcigum Inlet is the abode of a few families who earn a livelihood by net and line fishing off the White Islands and the cultivation of small farms.

Bay of Islands is the name commonly given to the coast between Mary-Joseph and Beaver Harbors. The islands off this part of the coast are very numerous, and the channels between them are so narrow, intricate, and beset with rocks that, although there is sufficient depth to admit schooners drawing 12 feet water, they are not easily described, and their safe navigation requires an intimate local knowledge, such as could never be acquired from the best chart. Coasters use them occasionally to avoid the heavy swell in the offing. A few know the channel sufficiently well to run inside the islands the whole distance between Liscomb and Sheet Harbors, whilst others are content to venture within a few of the most off-lying of the numerous islands with which this part of the coast is studded.

Mary-Joseph Harbor, secure and well sheltered, has the advantage of entrances east and west; but the channels are narrow and should not be attempted without a pilot by any vessel drawing more than 9 feet. The inhabitants, scattered along the shores, principally rely on fishing for subsistence, but cultivate the drift hills and keep cattle. A church stands on high ground in Smith Cove, east of the harbor, and may be seen from the sea.

As any attempt to convey an intelligible description of the numerous off-lying dangers would prove useless, the navigator is referred to the charts of the harbor and adjacent coasts.

Supplies.—Water may be obtained in Lobster Cove in small quantities, and fresh provisions and fuel can be bought at reasonable prices from the inhabitants.

Smith Rock, of small extent, with 12 feet water, lies 1,200 yards to the southward from the Gull Ledge. West Black Ledge, in line with the south end of Tuffin Island, leads south of it.

Gull Ledge, south 1½ miles from the south part of Barren Island, is composed of two bare ridges of slate of 30 feet high, and separated only by a narrow gully just wide enough to afford shelter to a boat. West Rock, with only 2 feet on it, makes the passage north of the ledge dangerous.

Seal Ledge exte[illegible] 1½ miles from the SE. point of Barren Island. Between this [illegible]ge [illegible] Black Prince Shoa[illegible] the channel, nearly a mile wide, leading int[illegible]ary-Joseph Harbor, but which on account of the dangerous shoals on its eastern side should not be attempted without a pilot, unless the wind be fair and the weather clear.

The mark for leading to the eastward of Seal Ledge is Gravel Point, the north extreme of Liscomb Island, open of Liscomb Point, bearing N. 8° E.

Thrumcap Islet, not more than 15 feet high, and distinguished by a small clump of trees, lies at the eastern entrance of Mary-Joseph Harbor. There are some patches of shoal water eastward of the islet, and on its western side is a dry rocky ledge, between which and Smith Point is a channel 200 yards wide, but not much used or generally known.

The more direct channel is south of Thrumcap Islet, and this is narrowed to 200 yards at the distance of ½ mile to the eastward of the islet by a rock with only 10 feet water, on the north end of Pan Shoal; Turner Point on Hawbolt Island, in line with Smith Point, bearing N. 88° W., leads north of this rock.

Directions for Eastern Entrance.—Being off Gull Ledge, with a leading wind, bring the Gravel Point of Liscomb Island open of Liscomb Point, bearing N. 6° E., the mark for leading to the eastward of the Seal Ledge, and run in on this course until the high barn on Hawbolt Island shows north of Barren Island; then steer for the church steeple bearing N. 67° W., and immediately Turner Point (on Hawbolt Island) apparently touches Smith Point, alter course to west.

By carefully keeping the latter marks on, proceed until False Passage opens to the SW.; then keep nearly a S. 79° W. course, so as to pass 200 yards from Thrumcap Islet and Smith Point; thence west along the north side of the channel so as to avoid Turner Shoal, with 9 feet water. The Middle Ground, a muddy flat with eel grass, is cleared by keeping Thrumcap Islet just in sight over Smith Point. Good and convenient anchorage can be obtained in 7 fathoms, mud, about half way between Lobster and Turner Points.

Liscomb Island, 2 miles long and 150 feet high, is wooded, and from its position tends to shelter Liscomb and Little Liscomb Harbors.

Crook Shoals.—From Crook Point, the east extreme of the islands, the Crook Shoals extend nearly a mile in an easterly direction. Wedge Island apparently touching Wine Head, bearing N. 31° E., leads about ½ mile SE. of the shoals.

Mackerel Shoal, with only 2 feet water, extends nearly 400 yards from Cranberry Point, the west extreme of Liscomb Island.

Channel Rock, lying SE. 2¼ miles from Crook Point, has 3 fathoms water on it, and breaks when there is much swell. Smoke and Cranberry Points, apparently touching, bearing N. 70° W., leads westward of it.

Liscomb Harbor.—The entrance to this harbor, which is landlocked and tolerably smooth at all times, is between Liscomb Island and Liscomb Point. At the distance of 2 miles the channel is considerably narrowed by rocky shoals, which extend from the northern shore, after which it maintains a breadth of 200 yards up to its head, where it receives the waters of Liscomb River, a rapid shallow stream abounding in trout and salmon. On the north side of the harbor is a large cove, named Spanish Ship Bay, but it is too much encumbered with rocks to render a description intelligible.

Supplies.—Good water can be obtained from a little brook on the south shore of Liscomb Harbor, and small supplies of fresh provisions and firewood may be purchased at moderate prices.

The population is scattered along the shores of Liscomb, Little Liscomb, and Jegogan Harbors; the people are industrious and intelligent. The church with a steeple in Liscomb Harbor forms a prominent object from the sea, and a useful landmark.

Dangers off the Entrance.—Although the rocky patches off the entrance of Liscomb Harbor are numerous, the danger from them is considerably diminished by the fact that they all lie nearly in the same direction, viz, south from Liscomb Point.

Hawbolt Rock, the most outlying danger, has 4½ fathoms water and lies S. 19° E. nearly 4 miles from Liscomb Point. It seldom breaks, but a vessel will pass to the southward of it, by keeping Gull Ledge only touching the SW. side of Tuffin Island.

Sand Shoal, composed of rock and sand, with 9 feet water on it, lies S. 17° E. 3 miles from Liscomb Point. Gull Ledge apparently touching the north side of Little White Island, which has a wooded hummock 50 feet high, bearing S. 73° W., leads southward of this danger, and between it and Hawbolt Rock.

Black Prince Shoal, which uncovers at half tide, and generally breaks heavily, lies one mile within the Sand Shoal.

NE. Breaker and Lump Rock lie to the northward of Black Prince Shoal; the former has 4 feet and the latter 11 feet water on it.

Liscomb Shoal extends eastward ½ mile from Liscomb Point, and the least water on it is 16 feet. The church steeple, bearing N. 33° W., will clear this danger.

Leading Mark.—The lighthouse on Liscomb Island, bearing N. 22° W., leads eastward of all these outlying shoals.

Saddle Rock, on the east side of the channel leading to Liscomb Harbor, with five fathoms water, bears S. 25° E., from Crook Point, dis-

tant 2¾ miles. Gull Ledge apparently touching the north side of Little White Island leads southward; and the church steeple in Liscomb Harbor seen just west of Cranberry Point, leads westward of Saddle Rock.

Tides.—The streams are weak and irregular, being much affected by the winds.

Directions.—Approaching the harbor from the westward, and being outside Hawbolt Rock, bring the lighthouse on Cranberry Island to bear N. 22° W. and stand in until the church bears N. 34° W., steer for it until past Smoke Point, then alter course to the westward so as to pass midway between Pye Point and the southern shore and anchor in 4½ fathoms, mud, with the east ends of Lang and Pye Islands in line.

From the eastward, bring Smoke and Pye Points in line, bearing N. 56° W.; run in upon this mark till abreast Mackerel Shoal, then steer N. 34° W. for the church until past Smoke Point, when alter course and anchor as before directed.

Little Liscomb Harbor.—A narrow shallow passage separates Liscomb and Hemloe Islands; the small channel between the latter island and the mainland being known as Little Liscomb Harbor, the entrance to which lies NE. of Liscomb Island, and has fair anchorage, but is only adapted for small vessels. It may be entered safely by bringing Redman Head apparently touching the NE. side of Hemloe Island.

Jegogan Harbor.—This deep inlet is not much frequented and has but few settlers. Vessels drawing 12 feet water may anchor near its head, secure from all winds; but the narrow channel leading to it, on the NE. side of Rae Island, is only 100 yards wide and should not be attempted without a pilot.

Tobacco Island, low and wooded, lies at the entrance of Jegogan Harbor. A vessel will pass southward of the Tobacco Ledges, extending one mile from the south point of this island by not opening Pye Point north of Liscomb Island Bank, bearing N. 84° W.

Shag Ledge is distinguished by a low dark rock, only 5 feet above high water, which lies east distant 1,200 yards from Redman Head, a steep wooded bluff 100 feet high, forming the western point of the harbor. There are several dangers off its west side, leaving a channel only 400 yards wide near Redman Head.

Directions.—A vessel intending to enter Jegogan Harbor by the middle passage, between Tobacco Island and Shag Ledge, should bring the NE. side of Hemloe Island apparently touching Redman Head, bearing N. 56° W., and steer in with this mark until Shag Ledge is in line with Brig Point (low and wooded, on the west side of Jegogan Harbor), bearing N. 34° W., then steer N. 22° W. so as to pass 200 yards eastward of Shag Ledge and continue on the same course to the anchorage.

Anchorage.—Good holding ground will be found abreast the houses

on the west side of the harbor, between Brig Point and Coote Head. It should, however, be borne in mind that a 13-foot rock lies north 800 yards from Brig Point; the middle of the small bare gravel islet, united at low water to Tobacco Island, in line with the wooded part of the NE. side of that island, leads clear of this rock.

Wedge Island is of clay, and towards the mainland rises abruptly to the height of 50 feet. It is surrounded by rocky ledges, and those on its north and south sides extend out to the distance of nearly ½ mile. Between it and the mainland, although the passage is obstructed by rocky ledges, a depth of 20 feet may be carried through, but on no account should this channel be attempted by a stranger.

Sand Shoal, with 5 fathoms water on it, lies S. 34° E. 1⅞ miles from Wedge Island, and only breaks after heavy gales.

Cape St. Mary, 137 feet high, is the headland immediately to the eastward of St. Mary River, and on its eastern side is Wine Cove, affording neither shelter nor anchorage.

St. Mary River.—The entrance is obstructed by a bar of sand nearly ¼ mile broad, over which a depth of about 10 feet may be carried at ordinary low water, springs. The outer edge of the bar lies between Wharf Point and Black Head; its inner edge being a little below Shag Reef, which extends off ⅛ mile from the western point of McDiarmid Cove.

For the first ½ mile above the bar the channel of the river is crooked and dangerous, running close to Shag Reef and the east bank of the river. Half a mile within the bar, and nearly in a central position between the shores of the river, is Horton Islet, between which and the eastern shore is the navigable channel. From the islet a long spit, which dries at low water, extends parallel with the eastern shore towards Shag Reef, leaving a channel between, 250 yards across.

Sherbrooke.—At the head of the navigation, and on the east bank of the river, is situated the village of Sherbrooke. Its principal trade is in firewood, deals, and shipbuilding; and it employs a few schooners in the Labrador fisheries. Below Sherbrooke, on the east bank of the river, there is another church, and a chapel, one of which, 75 feet high, forms a prominent object, and can be seen on approaching from the sea.

Bar.—After the continuance of southerly winds there is much swell in the bay, and the bar of this river is one mass of breakers, making the entrance during any time of the tide very dangerous, if not impracticable. Black Head and Birch Point in line, bearing N. 39° W., will lead clear of the shoal off Barachois Point.

Pilots.—The services of a pilot can be obtained from McDiarmid Cove, on the eastern side of the entrance to St. Mary River, by any vessel carrying the usual pilot signal.

Directions.—With the wind and weather favorable, steer for Wedge Island lighthouse on WNW. bearing, so as to open out the entrance of

the river. To enter the river safely, through the crooked channel, a pilot is requisite; for not only does the bar, but the cross set of the tides upon Shag Reef and Bridget Shoal, render local knowledge absolutely necessary.

Vessels frequenting this river moor head and stern, or are secured to the wharves, as there is not sufficient width in the channel, with any scope of cable, to swing clear of the mud flats. During the summer months vessels occasionally anchor in 5 fathoms, sand, in the middle of the bay, between Barachois Point and Cape St. Mary; but later in the season such anchorage is not recommended.

Water Shoal, with 3 fathoms water, lies S. 23° E. ¾ mile from Walter Island. Wedge Island in line with the east extreme of Liscomb Island bearing S. 59° W. leads SE. of Walter Shoal.

Indian Bay is entirely open to the SE. and only affords some shelter from SW. winds to fishing and small coasting vessels. The head of the bay receives the water of a large fresh-water lake, from which it is only separated by a narrow beach of sand. The hills forming the shores of the lake and bay afford good soil, and are carefully cultivated.

Walter Island is low and wooded, and at low water a beach of sand and stones nearly unites it to the main land near Wine Head, a high clay bank on the west side of Indian Bay. A reef of rocks extends to the distance 400 yards from its eastern side, affording some shelter to an insecure anchorage in the cove north of the island, sometimes used by coasting vessels.

Rude Shoal, composed of rock, extends ½ mile in an easterly direction from Wine Head, on the western side of the entrance to Indian Bay. Fleming Cliff, on the western side of the bay, seen open of Rude Point, leads eastward of Rude Shoal.

Hollins Bay, the next inlet to the eastward of Indian Bay, is open to the SE., and affords shelter at its head to boats and small craft. At its entrance, two-thirds across towards Bickerton Island, lies Hollins Shoal, with only 6 feet water on it.

Hollins Head, the SW. point of Hollins Bay, bearing from the beacon on Wedge Island, N. 58° E., 6⅔ miles, is a small and remarkable peninsula, united to the main land by a long beach of stones and shingle, having on its eastern side a cliff of reddish clay and bowlders 50 feet high. At the time of the survey in 1856 it was fast wasting by the action of the sea.

Nixonmate Shoal.—A reef extends to the southward 1½ miles from Hollins Head, on which the shoalest patches are, the Nixonmate Shoal and Webb Rock, distant 1¼ miles and 800 yards respectively from the head, and carrying 10 and 6 feet at low water. There are patches of 15 and 20 feet water between them. Castor Rock and Cape Mocodome in line, bearing N. 51° E., lead ½ mile to the southward of these dangers; and there is a clear passage ½ mile wide between them and Castor Shoals.

Castor Rock, small, of dark slate, and 4 feet above high water, bears from the eastern point of Bickerton Island south 1½ miles; and Castor Shoals, rocky patches with 3, 4, and 4½ fathoms water on them, lie off it to the eastward, westward, and southward.

Fleck Shoal, the outermost of these patches with 3½ fathoms, bears from Castor Rock, S. 5° W., 1⅞ miles; Green Island seen open southward of Pollux Rock, bearing N. 57° E., leads southward of Fleck Shoal.

The passage between Pollux Rock and the nearest Castor shoal is more than a mile wide. Harbor Island, apparently touching Cape Mocodome, N. 28° E., leads through it; but the NW. extremity of the island can not always be distinguished from the land behind.

Port Bickerton is a safe and convenient little harbor for small vessels. It has a clear entrance, carrying 6 fathoms water, between Bickerton Island and Barachois Head, but it is less than 400 yards wide. Barachois Head, on the eastern side of the entrance, may be known by its white cliff, from which, as also from the island, a reef extends 400 feet to the SE.

Directions.—To enter Port Bickerton with a leading wind, being ½ mile or more from the entrance, open Round Island (small, with red clay banks, and one mile within the harbor), only so far as to apparently touch the NE. side of Bickerton Island, bearing N. 56° W. steer in with these marks in line until abreast the SE. point of the island; then having passed in mid-channel through the entrance, avoid the shoal in the middle of the harbor by keeping close along the eastern shore until abreast Round Island, where a vessel may anchor, within the shoal, in 13 or 14 feet water over a bottom of mud.

If preferable, on entering steer to the westward round Bickerton Island at a distance of 300 yards, so as to pass between it and the shoal into the western part of the harbor, where the anchorage, in 12 feet over mud bottom, is sheltered by the reefs which leave only a shallow boat channel between the island and the main land to the westward.

Fisherman Harbor is quite open to the SE., so that the only part that can be termed a harbor is a cove on its southern shore, formed by a long beach of shingle, and in which vessels may lie securely in 10 to 15 feet at low water, over a bottom of mud. Outside the cove the holding ground is good in 4 to 7 fathoms, and as the sea is in some degree broken by the dangers off the mouth of the bay, large vessels with good ground tackle might safely anchor there during the summer months.

Directions.—To enter Fisherman Harbor from the southward with a fair wind, and being within Pollux Rock, observe that the marks which just clear the rocks off Cape Mocodome are Holly Point (on the western side of the entrance of Isaac Harbor), in line with Country Harbor Head, bearing N. 5° W.; keep Holly Point only a degree or two open until past Rose Shoal, when the point may be opened more, in order to give the rocks off the cape a wider berth.

As soon as Dorkin Island, at the head of the harbor, opens out to the northward of the shingle beach at the cove on the southern shore, bearing N. 62° W., the vessel may steer to the westward into the bay, where the only danger is a rocky shoal, extending ¼ mile from the high clay cliff next eastward of the cove just mentioned.

Proceeding for the harbor from the eastward between Rose Shoal and Black Ledge the marks are Dorkin Island and the shingle beach of the cove (already mentioned) bearing N. 62° W.

Country Harbor is unequaled by any other on the coast east of Halifax. It may be easily recognized by the three islands, Harbor, Goose, and Green, on the eastern side of the channel leading to it and Isaac Harbor, as well as by Country Harbor Head, a bold and precipitous headland of clay-slate, in nearly vertical strata, 160 feet high, and which may be considered as the termination of its western shore. The entrance is abreast Harbor Point, 3 miles farther to the northwestward, where the channel is 600 yards wide, with a depth of 11 fathoms.

From thence the harbor, with a varying depth from 10 to 5½ fathoms, is easily navigable as far as Stewart Cove on the eastern shore, off which is an excellent land-locked anchorage, with 4½ to 7 fathoms, mud, 4 miles from the entrance. Throughout this distance the only danger to be avoided is a rock, with 3 feet of water, about 100 yards off shore near the southern point of Mount Misery Peninsula.

From Stewart Cove the channel becomes narrow, but continues navigable for large vessels 2½ miles above it and for small vessels to the entrance of the river at the head of the harbor, which is distant 7¼ miles from its entrance at Harbor Point. Boats can ascend the river 2 miles, or to ½ mile above the bridge, where the tide ends.

The shores of this harbor are steep-to on either side, the summits of the ridges being generally only a short distance from the shore, and increasing in elevation from 200 feet at the entrance to 470 feet near its head. The population scattered along the shore are principally occupied in lumbering and the fisheries.

Green Point, on the western shore, at ⅜ mile within the entrance, is composed of shingle, inclosing a large pond, and ¾ mile farther in, on the same side, is Mount Misery, a round peninsulated hill 140 feet in height, and which forms the principal leading mark for clearing the dangers lying off the entrance to the harbor.

Middle Ledge, S. 51° E., 3⅜ miles from Cape Mocodome, is a rock about 200 yards in length, which covers at half tide. It is the apex of a rocky shoal about 800 yards long, around which the soundings are too deep and irregular to afford much warning by the lead. When the sea breaks on this shoal, as it invariably does—excepting with a high tide accompanied by unusually smooth water—there is no difficulty in passing on either side of the ledge. The nearest danger to the westward being Taylor Shoal, which bears from it S. 80° W. nearly 2 miles, it is only

necessary when passing on that side to give the rock or breakers a berth of ½ mile.

Pollux Rock, small, and 4 feet high, lies south 2¼ miles from Cape Mocodome, and from it a reef extends 800 yards to the NW. To pass clear to the westward of it, Country Harbor Head must not be opened out farther than to be only just seen in line with the bank or cliff off Cape Mocodome, and over the shingle beaches which form its SE. extremity.

Bingly Shoal, with 2½ fathoms water on it, lies N. 68° E. ½ mile eastward of Pollux Rock. Taylor Shoal has 3 fathoms on it, and lies ⅔ mile further to the southward; the two points on the eastern side of Goose Island, in line bearing N. 30° E., lead to the eastward of this shoal, but those points are low, and can seldom be distinguished. These two shoals are all the more dangerous, inasmuch as they break only during a heavy sea.

Rose Shoal is a rocky ledge ⅔ mile long on which the least water is 6 feet; it lies immediately off the pitch of Cape Mocodome, from which its outer or southern extremity bears S. 51° E., distant 1½ miles. The mark for leading to the southward of Rose Shoal is Fleck Point, on the northern side of Hollius Bay, just open of Bickerton Island, bearing N. 79° W.; and for leading to the northward, Barachois Head and Cape Rock in line, bearing west.

Bull Rock is small, dries at low water, and bears S. 68° E. 700 yards from Cape Mocodome, off which there are other rocks with 6 feet water, the outermost distant ½ mile from the cape. These all lie on the rocky shoal which extends ⅔ mile out from the cape, and are exceedingly dangerous at high water and with a smooth sea, when they are not marked by breakers.

Shoal Place, the most off-lying of the easternmost Country Harbor ledges, bears from Green Island S. 25° E. 2⅛ miles. It is small and rocky, with 5 fathoms water, and breaks only when a heavy sea is running.

Tomcod Rock covers at high water, and lies 1¼ miles south of Green Island. When breaking, as it usually does, this danger serves to warn vessels of their approach to the Tomcod Shoals, which are small rocky patches scattered around the rock in various directions.

Tomcod Shoals.—The northernmost of these patches, named Gull Nest, with 3 fathoms water, bears from Tomcod Rock N. 8° W., distant 800 yards, and from Green Island S. 5° W. ¾ mile, with a clear passage between. But the westernmost patches, with 2⅘, 3⅘, and 4 fathoms water, are most in the way of vessels bound to or from Country Harbor. The marks that lead close to the westward of them are Harbor Island, open westward of the low, dry reef off Flying Point (the south extremity of Goose Island) bearing N. 28° W.; or the summit of Mount Misery in line with Harbor Point, bearing N. 47° W.

Black Ledge, more than a mile in length in a north and south di-

rection, lies directly off the mouth of Fisherman Harbor. The central part of it is 2 feet above high water, and in several other parts it dries, or nearly so at low water. From its southern extremity, which is steep to with only 2 feet water, Cape Mocodome (in line with Hollins Head) bears S. 73° W., and is distant rather more than one mile. The head kept open leads southward, and the summit of Mount Misery open of Country Harbor Head bearing N. 41° W. leads eastward of Black Ledge.

The Marks to clear Middle Ledge to the eastward at the distance of 800 yards are the western points of Goose Island in line, bearing north; and these marks lead also over Jarvis Bank, a fishing ground lying a mile further out to the SE., and on which the least water found was 14 fathoms. The marks for passing to the southward or outside of Middle Ledge are Castor and Pollux Rocks in line bearing N. 79° W., or Pollux Rock and Hollins Head in line N. 76° W.; these marks also lead close inside or northward of Taylor Shoal.

Green, Goose, and **Harbor Islands** are formed of drift bowlder clay, resting on highly inclined clayslate rock, and are wooded with small spruce trees. They are low, the highest hill on Goose Island, the middle and the largest of the three, not exceeding 80 feet above the sea.

The numerous off-lying dangers in this locality forbid the coast being approached, during dark nights or fogs, nearer than the depth of 30 fathoms, and the constant use of the lead should be deemed indispensable, for by it alone can the position of the ship be ascertained.

White Rock, with 10 feet water, lies N. 67° E., one mile from Green Island; ¼ mile further off on the same bearing there is a rock, with 4½ fathoms water. There are other patches nearer the island, the southernmost of which, with about 2 fathoms water, bears from its south extreme N. 72° E. ⅜ mile.

Ragged Ledge extends nearly 1½ miles from the east end of Goose Island in an easterly direction, and from its outer extremity—which is seldom entirely covered—the whole of the reef is partially dry at low tides. There is no passage for vessels between this ledge and Green Island, or between Goose and Green Islands, the whole space being studded with rocky patches having 10, 12, and 18 feet water on them, and which break heavily in bad weather.

Dutch Shoal, is separated from the shallow water extending from the shore of Goose Island by a very narrow channel; and its northern edge is just cleared when Burke and Beach Points (on Harbor and Goose Islands respectively) are in line, bearing west, bearing in mind that the point of the northern beach of Harbor Island must at the same time be well in sight to the northward of them both.

Split Rock, small, and awash at low-water springs, lies near the southern end of a long rocky shoal, which, includes two detached patches of 3¼ and 5 fathoms water.

From Split Rock, which is dangerous at high water and with a smooth sea, Darby Point, on the main land near Island Harbor, appears just open northward of Beach Point (the north end of Goose Island), bearing N. 73° W.; the south extremity of Green Island bears S. 59° W. 2⅓ miles; the part of Brandy Ledge that dries N. 83° E. 1⅓ miles; and the eastern side of New Harbor Head, N. 33° E. 2 miles.

Brandy Ledge, the easternmost of the dangers off Green Island, is a rocky shoal ¾ mile in length, parallel to the coast, and ⅛ mile broad. Near the center of the ledge is a spot which only covers at high water, and from it New Harbor Head bears N. 12° W. 1⅔ miles, the channel between being clear.

Tides.—The streams are weak, seldom exceeding half a knot.

Directions.—Having passed Middle Ledge, either by giving its breakers a sufficient berth, or by the aid of the given leading marks, open the summit of Mount Misery only just to the eastward of Country Harbor Head, bearing N. 41° W., and steer in with these marks on until about midway between Rose Shoal and the south point of Goose Island, or until the latter is abeam; then alter course to N. 23° W., and when the summit of Mount Misery is in line with Harbor Point steer N. 47° W., or so as to keep the last-named marks on, until near the mouth of the harbor, which enter in mid-channel. Anchor anywhere within it, as there are no detached dangers in the way, excepting the rock already mentioned, lying 100 yards off the southeastern point of Mount Misery Peninsula. If intending to proceed to Stewart Cove, keep well over towards the western shore, to avoid the mussel beds that lie off the islet and the points of small coves on the eastern shore.

Island Harbor lies between Harbor Island and the main shore, in a bay between two long shingle points on the north side of Harbor Island. Directly abreast and ⅛ mile distant is Drumhead, a small island, close to the mainland and connected with it at low water, and next eastward from it is Darby Point, both of which are used as leading marks.

Pilots.—During the fishing season several families reside on Harbor Island, as well as on the opposite mainland, from whence pilots may be obtained; but they are not much in the habit of conducting vessels drawing more than 10 or 12 feet water.

Tides.—The flood stream runs from the eastward and its rate is usually less than one knot, but it is much influenced by the winds.

Directions: from the Eastward.—Coasting vessels usually take the inner route, especially late in the autumn, when northerly winds prevail, passing between Brandy Ledge and New Harbor Head, and through the Sound, as the passage between Goose Island and the mainland is termed. Having passed New Harbor Head at the distance of ½ mile, observe that the marks for clearing the shoals off Coddle Harbor, Coddle Island, and Seal Cove, are Darby Point and Drumhead in line, bearing west; therefore keep Drum Head only just open until

abreast Beach Point (Goose Island); then bring Burke Point to bear S. 78° W., and bearing in mind the mark for clearing Burke Shoal, steer so as to pass the point, and anchor in 7 fathoms, mud, just outside the line joining the two shingle points of the harbor. It is advisable to moor in this narrow channel with one anchor well into the bay to the southward.

A vessel will pass north of the dangers southward of this route by keeping both the shingle points of Harbor Island open northward of Beach Point, bearing west until the vessel is as far west as Coddle Island; then the course must be more to the north ward to clear the shoal off Goose Island, which contracts the channel between it and Graham Shoal, off Seal Cove, to the breadth of 400 yards.

From the Southward, having a southerly or easterly wind, enter the channel between Harbor and Goose Islands, steering north, and bordering on the Goose Island side of a mid-channel course, in order to avoid the reef off Saladin Point and the Middle Ground. Having passed between the latter and the reef always visible off Goose Island, alter course to N. 23° W., until Red and Drum Heads are in line, then steer N. 63° W., keeping them in one to clear Burke Shoal; and when Burke Point, which is bold to the northward, bears S. 78° W., steer to the westward, and having passed the point, anchor as before directed.

From the Westward, pass the NW. point of Harbor Island at a distance of 500 yards, steering N. 33° E. until Drum Head and Darby Point are in line, bearing east; then keep to the eastward, and bring Burke Point in line with the remarkable hill on Goose Island, bearing S. 56° E., which leads to the anchorage.

Isaac Harbor is separated from Country Harbor by Ragged Point, opposite which, on the eastern side of the entrance, is Red Head, a small peninsula with red clay cliffs, united to the mainland by shingle beaches, inclosing a shallow pond.

Off the next little peninsula to the northward, Webb Reef extends westward across the entrance to the distance of 450 yards, leaving a passage with 7 fathoms water, but only 400 yards wide, between it and Ragged Rocks, which cover at high water, and extend 260 yards from the shore ¼ mile within Ragged Point.

Pilots.—These dangers, and some shallow water within the harbor off its western shore, render a pilot necessary to a stranger entering this harbor, in which vessels may anchor securely in 3½ to 4 fathoms, mud.

Webb Cove, in which the fishing and coasting vessels usually anchor, in 2 fathoms, mud, is on the eastern side, and just within the entrance. From it the harbor runs in a northerly direction for a distance of 3 miles; at its head is a rapid stream and saw mill. The shores on either side rise gradually to the summits of hills of drift clay and bowlders, from 200 to 300 feet high, and are cultivated to some extent by an industrious community, whose principal occupations appear to be coasting and the fisheries.

Supplies.—Fresh provisions in moderate quantity, and water, may be readily obtained in Isaac Harbor.

Seal Cove, a small indentation immediately opposite Goose Island, dries at low water, with the exception of a narrow channel only available for boats.

Coddle Harbor, situated within the island of the same name, possesses secure anchorage for small vessels, in 12 to 14 feet water. The principal entrance is from the eastward, but as the dangers are too numerous for any written directions to avail, the place should on no account be attempted by a stranger.

New Harbor Cove is merely a shallow bay open to the SE., and affording no safe anchorage. At the head of the cove is the entrance of St. Catherine River, only one foot deep at low water, and dangerous to boats when there is any sea running. For the first 5 miles the river flows through a narrow inlet, which boats can ascend to its head; the stream then becomes rapid and unnavigable for 4 miles farther, to the large lake from whence it flows.

Little Harbor, a small shallow ind entation in the coast next west of Berry Head, is only adapted to admit boats at high water. Half a mile from its entrance, in a SE. direction, is Net Rock, with about 3 fathoms water, and south 2¼ miles distant is a patch—with 6 fathoms water—known as Tuffin Bank, on which the sea is said to break occasionally after very heavy gales.

Torbay is nearly 9 miles long east and west, and 4 miles deep. On its northern shore, Molasses, Cole, and Charlo Harbors afford secure anchorage for small vessels in 2 to 3 fathoms water, but the approach to them all is more or less difficult and would require local knowledge.

On the shores of Molasses Harbor is a settlement of Acadians, and on an elevation 110 feet above the sea, on the western side of the entrance, stands their chapel, a large wooden building without a steeple. There are settlements also at Cole and Charlo Harbors, as well as on the banks of Larry River at the west end of the bay; and there are chapels on the eastern side of the two last-named places, but they are small wooden buildings undistinguishable from others in the vicinity.

The Entrance into Torbay is between Berry Head and the small group of Sugar Islands, of clay slate not exceeding 30 feet in height, which stretch across the eastern part of the bay; where there is a clear channel ¾ mile wide, with 8 to 12 fathoms water. The anchorage within this entrance, off Webber Cove, near the western end of the bay, is easy of access and secure, in 6 fathoms, sand and mud; the only danger in the way being Webber Shoal, with 12 feet water, which lies off the north side of the peninsula, of which Berry Head is the eastern extremity.

Berry Head is a low rocky point at the eastern extremity of a peninsula, nowhere exceeding 80 feet in height, and which is united to the mainland by a beach and range of sand-hills. Shallow water extends off this peninsula ⅛ mile to the southward, and off Berry Head

there is a reef, as well as detached rocks, with varying depths on them, the outermost lying 800 yards eastward of the head.

Shag Rock, 2 feet above ordinary high water, lies S. 55° W., 2¼ miles from Berry Head. Shallow water extends 800 yards eastward of the rock, and between it and the shore there are several rocks which dry at half tide.

Gull Rock, small and detached, with about 12 feet water, lies S. 30° W. nearly one mile from Berry Head, and east 1¼ miles from Shag Rock. The Shag in line with New Harbor Head, bearing S. 75° W., leads southward of Gull Rock and Torbay Ledges.

Torbay Ledges, lying on the eastern side of the entrance, are still more dangerous. French Rock, the farthest out, with only 10 feet water, lies with Topstone Ledge off the western extremity of the Sugar Islands, bearing N. 12° W. 1½ miles; Berry Head, N. 85° W. 1⅛ miles; and the Bull Rock, with 4 feet water, which usually breaks, N. 67° E. ⅜ mile. The other ledges lie between these and the islands, with deep water between them, but so scattered as to leave no safe passage.

Hog Island apparently touching Leblanc Point, bearing N. 33° E., leads eastward of the Bull Rock; and Cole Harbor head, open westward of Topstone Ledge, N. 5° E., leads westward of French Rock and the ledges next northward of it, but does not clear Brig Rock, the westernmost of the ledges, with 9 feet water, and from which Topstone Ledge bears N. 10° E. 600 yards. The soundings are so irregular around these ledges, and the depth so great (15 fathoms close to them), that the lead scarcely affords any assistance.

Directions.—With a fair wind into Torbay, steer in with the western extreme of the islet, next east of Topstone Ledge, apparently touching Mars Head, and bearing N. 27° E., or with the eastern point at the entrance of Cole Harbor open westward of Topstone Ledge, the apparent breadth of the latter, bearing N. 5° E., whichever course the wind may render preferable; and when Berry Head and the points westward of it are in line, bearing S. 61° W., alter course immediately to N. 46° W., and so continue until the southern extremities of Topstone and Green ledges are in line, bearing N. 89° E.; then steer S. 89° W., keeping those marks on astern, until Flat Point and Berry Head are in line, bearing S. 23° E., then steer S. 67° W., to the anchorage, in 6 fathoms, mud, off Webber Cove, distant from ½ to ¾ mile.

Whitehaven is a secure harbor, with sufficient space and depth of water for a fleet of large vessels; but, like most of the indentations on this coast, the entrances, three in number, are so narrow and indirect, and the sunken rocks so numerous, that no large vessel could safely attempt them at night or in the dense fogs that so frequently prevail.

On the western shore there are hills of the drift bowlder clay, affording pasture for the cattle of the fishermen, who reside principally in Doliver and Marshall Coves, but whose houses will also be seen at

intervals all the way to the head of the NW. arm, distant 7 miles from the entrance of the haven.

White Head Island, 120 feet high, about ½ mile long, north and south and ¼ mile broad, derives its name from the whitish granite rock of which it is composed, and forms a salient feature off the point of land east of Whitehaven, its inner or northern end being about ⅛ mile from the main shore. The interior of the island is wooded with dwarf spruce trees.

SW. Bull, with 6 feet water, lies with the lighthouse bearing N. 22° E., distant 1,200 yards. Rocky ground, with 4 fathoms water, extends from it 800 yards to the westward, and there are rocky patches with 5 fathoms between it and White Head Island.

Dover Head, open to the southward of Millstone Island, bearing N. 56° E., leads to the southward of both the SW. and East Bull Rocks.

Black Ledge dries at low water. Its western extremity, from which the lighthouse bears N. 75° E. rather more than one mile, is cleared by keeping Doliver and Fisherman Islands apparently touching, and bearing N. 9° W., whilst Bald Rock and Flying Point in line, bearing N. 48° W., will lead SW. of it, and SW. Bull Rock.

Shag and Rocky Ledges are nearer the lighthouse, and above water; Gammon Islets, small and of bare granite, will be seen to the northward of them. The southern passage into Whitehaven Harbor is to the eastward of all these, including the SW. Bull, and between them and White Head Island.

East Bull, one of the outer dangers off the eastern entrance to Whitehaven, is a small detached rock, having only 6 feet water, and lies with the lighthouse bearing N. 68° W., distant 1,200 yards. Half way between it and White Head Island is Sculpin Rock, dry at low water; and midway between it and Millstone Island there is a rocky shoal carrying 3 fathoms water. The entrance to the eastern passage into Whitehaven Harbor is between this shoal and Millstone Island.

Three-Top Island may be easily recognized by the three remarkable hills, 50 or 60 feet high, from which its name is derived. The channels NW. of it, on either side of Doliver Island, are so narrow and full of rocks as to be only available for small vessels and boats. The ship channel eastward of it is 400 yards wide at entrance between Net Rock and Turtle Reef, which extends out from Spry Point. A short distance within the entrance, and nearly abreast the middle of Tree-top Island, there is a rock with 3½ fathoms water, which reduces the breadth of the channel between it and the island to 300 yards. The marks that lead to the SW. of this rock are, the ends of Gammon Islets and White Head Island apparently very slightly overlapping, and bearing S. 43° E.; these marks also clear the shoals farther in off Doliver Island and Deming Point, on the western side of the harbor.

Inner and Outer Gull Ledges and Bald Rock extend nearly a

mile to the southward from Deming Island, which, being united to the mainland at low water, forms the western point of entrance to Whitehaven. These ledges and rocks are all above water, but there are reefs between and around them; that most in the way being a rock with 6 feet water on the east end of the shoal tongue extending from Bald Rock, and lying S. 51° E. 300 yards from the Outer Gull Ledge; Net Rock (joined by a reef to the SE. extremity of Three-top Island) and Spry Point, in line, bearing N. 41° E., leads clear to the SE. of it.

The western passage into Whitehaven Harbor between the Six-foot Rock and Black Ledge is ½ mile wide. There is little or no warning by the lead in approaching any of these dangers from seaward, the depth exceeding 20 fathoms a little more than ¼ mile from them.

Kelp Shoal, with only 3 feet water, lies directly in the way of vessels passing westward of Fisherman Island. The marks for proceeding through the channel (only 100 yards wide) between Kelp Shoal and the island are the western extremities of Pilot Point and of Yankee Islet, in line, bearing S. 29° E. There is also a passage westward of Kelp Shoal, between it and the shoal, which extends 300 yards off shore to the southward of Marshall Cove; but the marks for running through it, namely, the western sides of Munroe Rock, Three-top Island, and Shag Ledge in line, might not easily be distinguished by a stranger.

Tides.—The rate of the tidal streams in the entrance seldom exceeds half a knot, unless it be the ebb stream, when accelerated by heavy rains or the melting of the snow in spring.

Western Passage.—Proceeding into Whitehaven Harbor in a steam vessel, or with a fair wind, through the western passage and Ship Channel, attention must be paid to the marks already given for clearing the rock off the Outer Gull Ledge on the one side, and Bull Rocks and Black Ledge on the other. It is seldom that the Black Ledge or the breakers on it can not be seen; to run in nearly midway between it and the rock off the Outer Gull Ledge, bring Net Rock to bear N. 22° E., and steer so as to pass around to the eastward and northward of it at the distance of 200 yards.

Open the lighthouse a little to the eastward of Gammon Islets, bearing S. 51° E., and steer in N. 51° W. until the north end of Three-top Island is nearly abeam. Then alter course to N. 23° W., taking care to keep White Head Island open eastward of the Gammon Islets, in order to clear the shoals off Doliver Island and Deming Point, on the western shore; and the lighthouse open westward of Spry Point, to clear Yankee Island Reef, on the eastern shore.

Anchorage.—Having passed this reef good anchorage may be obtained in 7 to 10 fathoms, mud, immediately within it, and also off the fish stages and houses on the western shore, although some swell sets in with the strong southerly winds. Small vessels anchor in Yankee Cove, into which 3½ fathoms can be carried through a very narrow channel. The best passage for a large vessel proceeding farther in, to

the more completely sheltered parts of the harbor, is eastward of Fisherman Island, where there is a clear channel, 200 yards wide, with a depth of 8 fathoms.

The Southern Passage into Whitehaven is only 200 yards wide. To pass eastward of the SW. Bull, steer between north and N. 13° W. for the western side of White Head Island, which should be passed at a distance not exceeding 200 yards; open out Millstone Island until it is touching Dogfish Point, bearing S. 77° E. Keep those marks astern and pass southward of Turtle Rock and reef off Spry Point. When the lighthouse is seen just open eastward of Gammon Islets, bearing S. 51° E., steer N. 51° W., and proceed as before directed.

Crane, Raspberry, and Wine Coves are small intricate indentations between Port Howe and Whitehaven, abounding in sunken rocks and difficult of access. They are adapted for small craft and boats, but without good local knowledge of the neighborhood and its numerous dangers the approaches to these places are perilous in the extreme.

Port Howe, to the westward of Dover Island, is small and dangerous to approach on account of numerous shoals. The entrance lies between Howe Point, to the eastward and Black Rock, 4 feet high, off Fluid Point, on the western shore, the distance across being a good ⅓ mile, but the navigable channel is narrowed by shoal ground to little more than 300 yards.

Within the entrance the shores are mostly steep-to, and there is sufficient depth of water for the largest vessels; but in the parts not exposed to the southerly swell there is barely room for a vessel to swing at single anchor.

Avery Shoal, with 3 fathoms water, lies a mile to the southward of Whale Island, with the lighthouse on White Head Island bearing S. 83° W. Dover Head, seen open southward of Snorting Rocks, bearing N. 46° E., leads southward of this shoal; also of the Vache and Whale Shoals, carrying 9 and 18 feet water, and lying 600 yards and 1¼ miles, respectively, farther NE.

Dover Shoals and Snorting Rocks.—Dover Shoals, with 4 fathoms on them, lie on the eastern side of the entrance of the channel S. 32° E., 1,100 yards from Snorting Rocks, which never cover. These latter are nearly joined at low water to the south extremity of Dover Island. Sunken rocks, with various depths on them, extend ¼ mile from Snorting Rocks, and, together with similar rocks lying 400 yards off Howe Point, must be left to the eastward when proceeding into Port Howe.

Directions.—Bring the Black Rock in line with the Sugar Loaf Hill, 180 feet high, about a mile inland from the entrance of Kyak Brook, at the head of the harbor, bearing N. 32° W., and steer towards them until the south extremities of Whale and Millstone Islands are nearly in line, bearing S. 44° W.; then alter course to pass 200 yards eastward of Black Rock.

If proceeding to the anchorage at the mouth of the western arm,

endeavor to preserve a mid-channel course between Port Island and the western shore, anchoring in about 8 fathoms, mud, with the west end of Snorting Rocks just open of the point west of Port Island, and borrowing on the southern shore in order to avoid the sunken rock off the point which divides the arms. If the anchorage within Port Island be preferred, pass around the NW. end of the island at 200 yards distance, to avoid the reef off it, and anchor within it in 4½ fathoms, mud.

Dover Island forms a salient point of the coast between Dover Bay and the indentation of Port Howe. It has an elevation of 95 feet, and is separated from the mainland by a narrow, but navigable, channel with 12 feet water, known as Dover Passage, which is frequented by fishermen and small coasting vessels; but as in the narrowest part the passage is only 60 yards across, it is evidently not adapted for either large vessels or strangers.

Dover Bay is 2½ miles wide at the entrance, from Dover Head eastward to White Point, and 4 miles deep to the northward; but although so extensive, it affords no shelter, being filled towards its head with islets and rocks above and under water, among which only small vessels and boats could pass. Louse Harbor on its western shore, one mile within Dover Head, has within it depth and space sufficient for large vessels; but its entrance to the north of Louse Island, with 3½ fathoms water, is only about 30 fathoms wide. Little Dover Run is a very narrow channel between White Island, forming the eastern side of the bay, and the mainland, its narrowest part being only about 30 yards wide, with 3 fathoms water. It leads in among the islets at the head of the bay, and is frequented in the season by fishing vessels.

The dangers at the mouth of Dover Bay are, a rock with 3 feet water on it, from which Dover Head bears N. 5° E. ¼ mile; Blackman Shoal, with 4 fathoms water, from which Dover Head bears N. 80° W. ¾ mile; Bay Shoal, with 5 fathoms water, lying nearly half-way between Dover Head and White Point, and breaking only after heavy gales; Horne Shoal, with 3 fathoms water lying nearly midway between Louse Head and White Island; and Lumsden Shoal, with 2 fathoms water, from which White Point bears S. 80° E., distant 1,300 yards.

The White Point Ledges extend 1,100 yards to the southward of White Point; and White Rock, with 5 fathoms water, which breaks after heavy gales, lies nearly ½ mile farther off, with the point bearing N. 35° W., distant one mile.

Gannet Shoal, with 9 feet least water, situated N. 67° E., one mile from White Point, consists of several detached patches. There are other rocks to the northward of it off Madeline Point, and at the entrance of Little Dover Run, for which the chart is necessary to insure the safe guidance of a vessel in such intricate places.

Telegraph Cables.—Six submarine telegraph cables are landed at Dover Bay, four in the northern bay on the western side of White Is-

land, and two in the bay westward of Walsh Point. These cables are laid in directions between SW. and SE. from Dover Bay; one to Cape Ann, one to New York, two to the Land's End, and two to Waterville, Ireland.

Andrew Island, about 1¾ miles long and 1¼ miles broad, is separated from the mainland by a deep channel about ⅛ mile wide. The island is low, its greatest elevation, 35 feet, being at the south end. It is also boggy and barren, with stunted spruce over its surface.

Andrew Passage, between Andrew Island and the mainland, and leading to Glasgow and Canso Harbors, is too intricate for a written description to avail. It is frequented occasionally by fishing and small coast vessels, but even with the aid of a chart, local knowledge is indispensable for the safe guidance of even a small vessel.

Gannet Ledges.—The outermost of these ledges, with only 3 and 4 feet water, extend eastward nearly a mile from Gannet Point, the south extremity of Andrew Island; and foul ground, with depths of 6 and 9 fathoms extends a mile farther to the SE. The SW. extremity of Dover Island kept open southward of White Point, bearing S. 63° W., leads ½ mile southward of these ledges, and the dangerous Boom Rock.

CHAPTER VI.

CHEDABUCTO BAY, LENNOX PASSAGE, GUT OF CANSO.

From Cape Canso to Guysborough, a distance of 25 miles in a westerly direction, the south coast of Chedabucto Bay is composed of primary rocks partially covered with drift sand, clay, and bowlders. This drift appears occasionally in high, red looking cliffs on the shore. When cleared of stones it furnishes a tolerably productive soil, but the climate is not favorable to agriculture, and the large fishing population obtain little beyond a few vegetables and food for their cattle. Drift ice in the month of May, and in June the prevailing easterly winds, bringing fog from a cold sea, check vegetation until past midsummer and seldom allow of settled warm weather before July.

Cape Canso is a rocky islet, 15 feet high, joined to the east point of Andrew Island at low water by a sandy neck about 200 yards in breadth. Cape Rock, small, and 8 feet high, will be seen off it 250 yards to the SE. At 1¼ miles to the NW. is Glasgow Head, a remarkable red clay cliff 50 feet high. An equal distance farther in the same direction, along an unbroken shore, is the town and harbor of Canso.

Cranberry Island marks the east side of the entrance of the channel into Canso Harbor. It is low, rocky, ¼ mile long, and divided into several parts at high water.

Frying Pan, Crow, and Petit-Pas Islets.—The Frying Pan, a low islet of shingle, ¼ mile, N. 35° W. from the lighthouse on Cranberry Island; and Crow Islet, a low rock covered with dark spruce bushes, not exceeding 20 feet in height and distant ¾ mile farther in the same direction, will easily be distinguished. Still more remarkable is Petit-Pas, a small, round, grassy islet, 200 yards in diameter, with a red clay cliff 50 feet high, and 1¼ miles N. 66° W. from the lighthouse.

Oliver Island is wooded and separated from the east end of George Island by a narrow boat channel. Its eastern extremity, Lock Point, forms a leading mark and bears from Petit-Pas N. 26° E. ¼ mile.

Grassy Island, ⅓ mile to the westward of Petit-Pas, is a hill of drift sand, clay, and bowlders, ½ mile long and 60 feet high. It is covered with grass, and displays the only other clay cliff besides that of Petit-Pas on the east side of the channel to Canso Harbor. It is no longer insulated, being now united to George Island by a bar of shingle which is never covered. The remains of an extensive redoubt give the name of Fort Point to the high western extremity of the steep grassy bank of this island, which, as it is used for a leading mark, must be care-

fully distinguished from the edge of the shingle beach, extending from it 200 yards to the NW., and also used for a leading mark. There is a narrow channel for boats between the Grassy Island beach and Piscatiqui Island.

Canso Harbor is formed by Piscatiqui and George Islands on the east, and by the mainland and Durell Island on the west. Cutler Island, together with the shallow water between it and Durell Island, shelter it from the north, while Grave Island and the bar uniting it to Lanigan Beach protect it from the SE. Grave Island is very small, with steep clay banks fast wasting away by the action of the sea (1860.) The entrance to the harbor is between the latter and Cutler Island, towards the wharves of the town, off which the anchorage is quite secure, with water for vessels of the largest draft; but the Ship Channel, which runs through into Chedabucto Bay, passes to the eastward of those Islands, between them and Piscatiqui. The least water in this channel, 4 fathoms, is on a bar which stretches across from Grave Island to Piscatiqui Island.

Canso is on the mainland, the more ancient part standing on hills of red sand, clay, and large bowlders. The church, built on the summit of a ridge 100 feet high, is a conspicuous object seen over the islands from a great distance at sea. The newer part of the town, together with the two chapels, are farther westward along the shore of the Tickle, a narrow boat channel separating Durell island from the mainland. The whole forms a long, straggling village, with a population of about 1,200. Near the north point of Durell Island, which is 1½ miles long, is Flag Hill, 105 feet high, which is used as an important leading mark.

Western Side.—Patch and Boom Rocks.—Approaching from the southward, the entrance of the Ship Channel between Cape Canso and Cranberry Island is a mile wide. The outermost danger on this side is Patch Rock, with 5 fathoms water, but on which the sea is said to break occasionally; it bears from Cape Canso S. 51° E. 1¾ miles.

Within Patch Rock—to the westward, nearly ¾ mile—is Boom Rock, with 12 feet water, S. 23° E., 1½ miles from Cape Canso, and east 1½ miles from the south point of Andrew Island. The southwestern extreme of Dover Island, open to the southward of White Point bearing S. 63° W., leads clear to the southward of both these rocks.

Cape Breaker and Roaring Bull Rock.—Cape Breaker, with 2½ fathoms water, bears from Cape Canso S. 79° E. one mile distant. Crow and Cranberry Islands, apparently touching, will lead 200 yards eastward of Cape Breaker. As it can only be seen when there is a heavy sea, this rock is extremely dangerous, and would be still more so were it not that Roaring Bull Rock, 800 yards to the westward, almost always shows, and therefore assists in indicating the position of its neighbor.

Keeper and Kirby Rocks, with 4 and 2½ fathoms water, are dis-

tant ½ mile and one mile respectively, about NW. from Cape Breaker Rock. The steeple of the Roman Catholic church at Canso, seen open NE. of Glasgow Head, bearing N. 62° W., leads just clear to the NE. of Cape Breaker, Keeper, and Kirby Rocks.

Black Rocks lie NW. about ½ mile from Kirby Rock, the passage into Glasgow Harbor being between them. They consist of two masses of trap rock about 5 feet high, and can therefore always be seen; as the shoal water extends from them only 200 yards to the eastward, they are of great service in pointing out the western side of the channel.

Bootes Rock, with 6 feet least water, and the Man-of-War Rock, which covers at half tide, lie farther to the northward, the latter, the most distant, being a long ½ mile from the Black Rocks. There is no safe channel for ships between these three last named dangers, which all rise from a shoal and rocky bank, which stretches across the entrance of Glasgow Harbor; but there is a navigable channel between them and Glasgow Head, though narrow and difficult.

The Man-of-War Rock bears from Glasgow Head N. 40° E. about ½ mile. It lies much in the way, but is usually shown by breakers, and the marks for it are distinct and good. The eastern ends of the Black Rocks and of the Cape Rock when in one, bearing S. 27° E., lead just to the eastward of it, and, of course, clear the Bootes; therefore let the Cape Rock be kept open to the eastward of the Black Rocks until Man-of-War Rock is past; which will be the case when Flag Hill comes in line with the steep bank (not the beach) of Fort Point, bearing N. 65° W.

The Mackerel Rock lies ½ mile farther to the NW. Having 10 feet water, it seldom shows, and is therefore the more dangerous. When on it the eastern extremes of Oliver Island and of Derabie East Rock are in one, and just open to the eastward of Petit-pas, which bears from it N. 20° E. 800 yards. The same marks which clear the Man-of-War Rock, namely Flag Hill and the steep bank of Fort Point, as above mentioned, lead to the NE. of this rock also, at the distance of 100 yards. There is a clear channel on either side of the Mackerel Rock, but that to the northeastward of it has the advantage of leading marks.

South Shoal is the last danger on the west side of the Ship Channel, until the vessel arrives at Grave Island and the entrance of Canso Harbor. It has 3 feet least water, and extends 600 yards off shore, or half way across toward the eastern extremity of Grassy Island; leaving a clear channel between it and the Grassy Reef of 350 yards in breadth.

The shoal water extends only 100 yards off Grave Island, leaving a channel between it and Piscatiqui Island 200 yards wide, and 4 fathoms in it at low water.

Stanley Shoals consist of four small rocky patches ¼ mile apart.

The least water, 4 fathoms, is on the northern and western patches, and is sometimes shown by breakers.

The northern patch lies with the northern of the Black Rocks in line with the north point of Glasgow Head, and Crow Islet, seen half its apparent breadth, open east of Cranberry Island. From the western patch, the eastern end of Crow Islet is just shut in behind the eastern extreme of Cranberry Island, and the highest part of Glasgow Head, seen just over the north end of the southern group of Black Rocks.

The western extremes of Derabie and Cranberry Islands in line, bearing N. 40° W., lead between these shoals and Cape Breaker.

Nickerson and David Rocks.—From Nickerson Rock, which is detached, with 4 fathoms least water, Cranberry Island lighthouse bears N. 74° W. 1¼ miles. This rock is less in the way of navigation than Stanley Shoals, from which it is distant about ½ mile. The same remark applies to David Rock, with 13 feet water, ½ mile nearer to the lighthouse, which bears from it N. 65° W. ¾ mile.

Washball Rock, a rocky patch, which dries at low water, lies S. 43° W. 400 yards from David Rock, and S. 54° E. 1,400 yards from the lighthouse; it forms the extremity of a rocky shoal extending from Cranberry Island, and occupies a position midway between the lighthouse and Stanley Shoals. As this danger can almost always be seen, it is of great service in guiding vessels. These two last-named rocks lie so near the edge of Cranberry Island Bank, as to leave no safe passage between them.

Pink Rock, with only 4 feet water, lies ½ mile to the southward of Cranberry Island lighthouse; but from it a ledge, with 3 fathoms water, extend 300 yards in a westerly direction, and forms the extreme southern edge of Cranberry Island Bank, from which the lighthouse bears north ½ mile. Flag Hill, and the SW. extremity of the beach of Fort Point in line, lead just clear to the southward of this danger; but as the beach can not always be made out, Flag Hill should be kept about half a point open SW. of Fort Point, until the bearing of the lighthouse shows that the rock is passed.

Frying Pan and Pas Reefs.—The next danger bordering the Ship Channel is the Frying Pan Reef, running out 800 yards from the low Frying Pan Islet, and separated by a narrow channel from the Pas Reef, which extends ½ mile to the eastward from Petit-pas. From the Pas Reef the edge of the shoal continues to the westward, skirting Petit-pas at the distance of 300 yards, and then crossing the bay, between it and Grassy Island, where it joins the shoal water off the latter.

Grassy Reef projects ¼ mile from the SE. extremity of Grassy Island, and diminishes the breadth of the deep water between it and the equally dangerous Mackerel Rock to 250 yards, and as the channel is crooked there, as well as narrow, they form a difficult pass for large vessels.

Dangers in NW. Entrance to Canso Harbor.—The difficulties of the NW. entrance of Canso Harbor arise principally from the narrowness of the channel between Cutler or Hart and Piscatiqui Islands, where the deep water is less than 80 yards wide; and from the position of the Starling Rock being so much in the way. It is a passage that should not be attempted in a large vessel without a fair and steady breeze; for although the dangers about to be described are for the most part visible, yet there is no safe anchorage in the event of the wind failing, the bottom being of rock.

Net and Whitman Rocks.—On the western side of this entrance the dangers are, the Net Rocks, which dry at a quarter ebb; and the Whitman Rock, with 2 feet least water. They both lie off the east side of Durell Island, at the distance of 400 yards. The marks which just lead clear to the eastward of both these rocks, and the shoal water around them, are the church steeple at Canso, and the western extremity of Cutler Island in line, bearing S. 18° E.

Bald Rock.—On the eastern side of the entrance, and distant 300 yards from the north end of Piscatiqui Island, is the Bald Rock, of bare granite, 140 yards long and 30 feet high. It lies directly opposite to the Whitman Rock, and the channel between them is 400 yards wide. There is a rock, dry at low water, lying 200 yards to the northward of the Bald Rock, and shoal water 100 yards farther off in the same direction; but off the west side the shoal only extends 100 yards, and is cleared by the above church steeple and the house on Cutler Island in line bearing S. 15° E.

The only other danger, on this side of the entrance, is the reef off the NW. point of Piscatiqui Island, which is partly dry at low water, and extends 150 yards out to the NW. This reef will be cleared if the church steeple be kept open to the westward of the house on Cutler Island; or by Glasgow Head and Piscatiqui Island touching, and bearing S. 41° E.

Starling Rock lies 120 yards off the western shore of Piscatiqui Island, and in the very line of the narrow channel between these islands, with only 4 feet over it at low water, renders this entrance extremely dangerous to strangers; for the channel between this rock and the shoal water, which extends 250 yards off the south end of Cutler Island, is only 80 yards wide.

Beacons.—To facilitate the navigation into Canso Harbor by the northern entrance, two beacons 30 feet high, with triangular heads painted white, have been erected.

The south beacon stands on Lanigan Hill, with the Roman Catholic church bearing N. 77° W.

The north beacon on the eastern side of Grave Islet bears N. 15° W. from the beacon on Lanigan Hill.

Directions through Ship Channel.—To enter Canso Harbor from the southward, at any distance not less than 3 miles, bring the light-

house on Cranberry Island to bear N. 41° W., when Crow Islet will be in one with and seen over Cranberry Island. Steer for the lighthouse on that line of bearing, taking care not to open the whole of Crow Islet out to the westward of Cranberry Island (for fear of the Cape Breaker), until the church steeple at Canso is seen to the NE. of Glasgow Head, bearing N. 63° W. As soon as that steeple opens to the NE. of Glasgow Head, steer N. 49° W., or so as to make a direct course towards the SW. side of Petit-pas.

Continue the course towards Petit-pas, taking care that the Cape Rock is kept open to the eastward of the Black Rocks, until Flag Hill comes in line with the steep bank of Fort Point, bearing N. 63° W. Then steer on the last named leading marks, taking care not to open Flag Hill in the least to the SW. of the steep bank of Fort Point until the eastern extremities of Petit-pas and Oliver Island come in line, bearing N. 27° E. Then alter course instantly, and steer S. 88° W. for the church at Canso, until Petit-pas and Crow Islands are touching, and then N. 70° W., for the SW. end of Grave Islet, keeping Walsh's house (on Durell Island on the NE. side of the entrance of the Tickle) just open to the SW. of it, by which the vessel will pass midway between the Grassy Reef and the South Shoal, and clear of the shoal water off Grassy Island. As soon as the NW. extremity of the beach of Fort Point bears NE. steer N. 52° W., or for the wharf and stores on the west side of Cutler Island until the lighthouse on Cranberry Island and the southern extremity of the beach of Fort Point come in line. Then steer N. 75° W., keeping the last named leading marks in line astern, and they will lead clear of the shoal off Grave Islet; round which, at any distance from the islet between 120 and 240 yards, the vessel may haul to the westward into the harbor.

Through NW. Entrance.—Being outside the Net Rocks, bring the Roman Catholic church steeple at Canso to bear S. 14° E., when it will be seen over Cutler Island, midway between the house on the island and its western end. Steer for this mark, and it will lead nearly midway between the Bald and Whitman Rocks, and when the red clay cliff of Glasgow Head to the southward of Canso is seen through the channel between Cutler and Piscatiqui Islands, bearing S. 40° E., steer for it, keeping in mid-channel until Grave Islet Beacon is in line with Lanigan Beacon bearing S. 18° E.; steer with these beacons in line, and when Cranberry lighthouse appears in one with Fort Point on Grassy Islands, steer to the westward into the harbor.

Tides.—The duration of the rise and fall, and still more of the streams, is influenced by winds or other causes; but the rate of the streams in the NW. entrance of the harbor, where they are strongest, does not often exceed one knot. The flood comes from the southward, the ebb from the opposite direction.

Off-lying Islands and Canso Ledges.—The small islands lying outside Canso Harbor, and not previously mentioned, have the names

of Hog, Cook, Welsh, and Derabie, and with many nameless rocks form a chain 1½ miles long in an easterly direction, terminating with the East Rock, which is of bare granite, 20 feet high, and distant a long ½ mile northward from Crow Island. Rocks awash and shallow water continue from the East Rock 800 yards to the eastward; but on the north side these islands are bold to, excepting at their west end, where the Black Rock and the shoal around it extend 400 yards from Hog Island to the northward. The Black Rock, which is seldom, if ever, entirely covered, is ½ mile NE. of the Bald Rock, and between them lie the entrance to a channel between the outer islands and Piscatiqui and George Islands, which is full of rocks, and only navigable by boats and very small fishing vessels. The outer islands are occupied by fishermen during the season, but the north shore of George Island by more permanent residents. All these islands are formed of granitic rocks, excepting Grassy Island and Petit-pas, and most of them are sparingly wooded with dwarf spruce trees.

The East Rock bears from the lighthouse on Cranberry Island N. 25° W. 1¾ miles; and to the east of the line joining them lie a number of dangerous rocks with deep water between them. The innermost of these, the Fanning and Scott Rocks, with 12 and 9 feet least water, respectively, lie on the eastern edge of the Cranberry Island bank, and at the distance of ½ mile from the lighthouse; while Park Ledge, always above water, Crow Reef, and the Budget Rock are in like manner nearly united by shoal water to Crow Island. There is a deep channel between the Budget Rock and the Frying Pan, but it is narrow and destitute of good leading marks. Next, outside of the dangers which have been mentioned, are the Kelp Rocks, Inner Bass, Middle Rock, and Broad Shoal; of these, the first and last have 12 and 9 feet least water, respectively, and only show when there is a sea running; but the Inner Bass is awash at low water, and the Middle Rock, having only 4 feet water, can almost always be seen.

Grime and Bass Rocks are the outermost of the off-lying dangers known as the Canso Ledges, which render the approach to the ship channel between Cranberry Island and Cape Canso extremely dangerous to strangers and more especially so as the locality is celebrated for fogs. Grime Rock, which has 12 feet least water, is only marked by breakers when the sea is heavy; it is surrounded by various patches with from 3 to 5 fathoms, the outermost rocky patch, with 4½ fathoms, being ¼ mile to the eastward. From Grime Rock the lighthouse on Cranberry Island bears S. 52° W., distant 2½ miles; it also lies with the steeple of the Roman Catholic church at Canso, the southern extremity of Grassy Island, the northern end of Petit-pas Island, and Park Ledge all in line.

Bass Rock, with 6 feet water, on which the sea breaks frequently, lies S. 24° W. 750 yards from Grime Rock, and N. 55° E. 2¼ miles from Cranberry Island Lighthouse; from Bass Rock the steeple of the

Roman Catholic church at Canso, and southern extremity of Petit-pas Island appear in line.

Automatic Buoy off Cape Canso is painted black, marked *Cape Canso*, and sounds a 10 inch whistle. The buoy is moored in 20 fathoms water 1½ miles east from Grime Rock, and will be kept in position during the season of navigation each year.

Caution.—In passing round these dangers in thick weather, great caution and the constant use of the lead are indispensable. If the approach be from the northward, remember that they lie only 800 yards within the 30 fathom edge of the bank; if from the southward and eastward, go into no less than 25 fathoms until the soundings indicate that the vessel is off the bank to the northward; and lastly, in clear weather, do not haul to the westward into Chedabucto Bay until the high land of Black Point opens to the northward of Derabie Island, bearing west.

Fox Island, lying 4½ miles to the westward of Canso, is granitic, ½ mile long, and 40 feet high. It is connected with a shingle point of the mainland, distant 700 yards, by a bar of sand and stone nearly dry at low water.

The Fox Rocks lie off Lazy Head, between Durell and Fox Islands, and dry at low water; the outer Fox being ½ mile off shore, and the same distance eastward from Fox Island. The north point of Fox Island and the pitch of Black Point in one, clear the outer Fox in 5 fathoms; and also the shoal off Tickle Island.

Half Island Cove, 4½ miles to the westward of Fox Island, affords a small and unsafe anchorage, being open to the winds and swell from the north and east. Off the small island, on the west side of this cove, there is a dangerous rock, lying 200 yards from it to the eastward.

Philip Cove, 2 miles farther to the westward, affords shelter to boats, the sea being kept out by rocks in the entrance, and which becomes dry soon after high water.

Crow Harbor, celebrated for its mackerel and herring fisheries, has excellent holding-ground, and water enough for vessels of the largest draft; but there is not room for many large vessels in the eastern part of the harbor.

Rook Island is a rock 200 yards long, lying nearly in the middle of the entrance; and the Rook Rock, with 3 feet least water, lies 70 yards off the NW. extremity of the island, with deep water close to. The channel to the westward of the island has 17 fathoms water in it, and is 600 yards wide at the entrance, between Rook and Corveau Rocks, which last are dry at low water, and form part of the reef off Lamb Point.

The channel to the eastward of Rook Island, between it and the Brodie Rocks, is generally preferred with easterly winds, although having only 23 feet water, and 200 yards wide. The Brodie Rocks, which dry at low water, form part of the reef which extends 450 yards from

Lazy and Brodie Points towards Rook Island, giving security to the eastern part of the harbor. The mark for clearing these rocks, and the shoal water within them on the NE. side of the harbor, is Lamb Point and the extreme of the land to the westward in one, bearing N. 80° W.

Directions.—In the absence of buoys and beacons, vessels wishing to enter Crow Harbor should, in approaching from the eastward to avoid the shoal which extends 300 yards off Lazy Point, bring the east end of Rook Island to bear nothing to the westward of S. 32° W., and steer for it until within the distance of 400 yards, then alter course to the southward, to pass about 200 yards to the eastward of that island. When the vessel has run past the island, the marks already given for clearing the Brodie Rocks, and the shoal water on the NE. side of the harbor, will come on, and enable her safely to haul in to the SE., and choose a berth in 6 or 7 fathoms, over a mud bottom.

Tides.—There is little or no stream of tide within the harbor.

Coast.—At the distance of ½ mile to the westward of Lamb Point is the first of three remarkable high clay cliffs, which point out the position of Crow Harbor from a distance after which there is nothing deserving particular notice along the hilly, bold, and rocky coast up to the Salmon River, unless it may be Half-way Cove, as affording a landing place for boats.

The Salmon River is navigable for boats to the distance of 2 miles in from its very narrow entrance, on the bar of which the depth is only 3 feet at low water. Shoal water extends ¼ mile out from the entrance, and a rocky ridge with 4 fathoms least water projects ¾ mile farther to the eastward. Bigby Head, a remarkable cliff 100 feet high, separates this river from Toby Cove, another place for boats, with 4 feet on its bar at low water.

Guysborough Harbor, at the head of Chedabucto Bay, is an extensive inlet, running in to the northward, with a depth of water sufficient for vessels of large draft; but with such a dangerous bar, an entrance channel so narrow and crooked, and such rapid tides, that no written directions could be available. The assistance of a pilot acquainted with every local peculiarity of the tides and winds is indispensable for the safety of a vessel even of very moderate size, either in entering or leaving this harbor, as will appear from an inspection of the chart.

Guysborough, the county town, is advantageously situated on the western side of the harbor, the deep water approaching close to its wharves. It contains about 1,800 inhabitants, and has 2 churches; the northernmost standing 95 feet above the sea at high water. The hills attain the height of 500 feet on either side of this beautiful inlet, which is navigable for ships up to the Narrows, where the depth is 8 feet at low water at 4 miles from the entrance. Small vessels may proceed 3 miles still farther, and boats to the bridge, where the tide ends at 8½ miles from the entrance, and where the Guysborough River, a

small stream, enters the inlet, flowing through rich meadows called the Guysborough Interval.

Tides.—The streams in the narrow entrance of the harbor run from 4 to 5 knots.

Outer Bar.—The entrance channel into Guysborough Harbor between Peart Point and Stony Patch is 80 yards wide, and carries 5½ fathoms water; but farther out and stretching across from Toby Point to Hadley Beach there is a bar of sand, with 17 feet on it at low water, and which is rendered impassable at times by heavy breakers.

The Inner Bar lies across the inner entrance, which is 230 yards wide, between Eliza Point and Hadley Beach. The depth which can be carried over it is 13 feet at low water, in a channel only 80 yards wide. Before arriving at this bar there is room enough for a vessel or two to anchor in the mouth of Ingersol Creek out of the strength of the tide and sheltered from the sea by Stony Patch.

Directions.—The course across the Outer Bar, in the deepest water, is west, steering for the lighthouse until within the distance of 200 yards, then curving gradually to the northward and eastward, as the vessel passes the beach off Peart Point at the distance of 60 yards, and crosses the mouth of Ingersol Creek to the Inner Bar. The course then becomes N. 45° E. for 200 yards while crossing that bar, and then northerly through a clear and deep channel for ¾ mile to the safe and spacious anchorage off the town.

North Shore of Chedabucto Bay.—Michaux Point, the NE. point of Chedabucto Bay, is a peninsula, united to the mainland by a double beach, inclosing a pond; and Red Point and Red Island are distant from it 2¼ miles to the westward. Off these points, and extending across the bay between them, lie the Michaux Ledges, dry at low water, and usually shown by heavy breakers. The SW. extremes of St. Peters Island and Mark Point in one, lead close outside or to the southward of them, in 4 fathoms; therefore, in standing towards them, tack while the point is well open to the west of the island.

St. Peter Island lies 3½ miles farther to the NW.; and in the shoal bay between it and Red Point will be seen the church steeple and the village of Ardoise. The island is low and about ¾ mile long. The cove on its inner or north side affords shelter to numerous small craft and boats, this being one of the principal fishing stations in these parts. The island is bold to seaward, but off the NW. side is the Haddock Rock, at a distance of ¼ mile; and in the bay between it and Mark Point there is much shoal water, leaving, however, a clear channel within the Horseheads and Samson Rocks into St. Peter Bay (page 174).

Beak Point.—The eastern and southern shores of Madame Island will now be described, commencing at Beak Point, distant 1¼ miles south from Cape Round. The shoal water runs out only to the distance of 400 yards, but off it there is much rocky and irregular ground, on which the sea is said to break occasionally in heavy gales. The least

water that could be found there was 4 fathoms, which bears from the point S. 66° E., and is distant 1½ miles. Another rocky patch, with 4½ fathoms, lies N. 71° E. a mile from the point. A vessel of large draft should pass outside this rocky ground, especially when there is a heavy sea running.

Bay of Rocks, lying between Beak Point and the Gros Nez, a rocky islet at the NE. extremity of Petitdegrat Island, is 3 miles wide. It is a dangerous place, affording no safe anchorage for ships, being open to all easterly winds, which send in a heavy sea. Bewes Shoal, with 20 feet least water, lies nearly in the middle of the bay, and beside the low rocky islets near its head, there are many other rocks around and off its shores.

Red Head, the SE. extremity of Petitdegrat Island, is a remarkable cliff 70 feet high. Shallow water runs out from it ¼ mile, to clear which, keep Beak Point open to the eastward of Flat Point.

Green Island.—Green Island, of slate, with precipitous shores, 90 feet high and ⅛ mile long, lies a mile to the eastward of Red Head. It is bold all round, and there is a clear channel ¾ mile wide between it and Red Head.

Orpheus Rock (called Boss by the fishermen) lies east 1⅜ miles from Green Island. It is awash at low water, and the sea consequently almost always breaks on it; otherwise it would be still more dangerous than it is. Heath Head (the southern extreme of Petitdegrat Island, and distant a mile west from Red Head) will lead clear of this rock, either to the northward or southward, according as it may be kept open to the north or to the south of Green Island.

Petitdegrat Inlet, separates Petitdegrat Islet from Madame Island by a very narrow channel, through which boats may pass at high water into the Bay of Rocks. It is 3 miles long, and has water enough for large vessels, but the rocks are so numerous and the channel between them so narrow as to render the aid of a native pilot indispensable. The fisheries are extensively prosecuted from this inlet, and its shores, as well as almost every cove in the island, are occupied by the fishermen and their employers.

Cape Hogan, the southern promontory of Madame Island, separates Petitdegrat from Arichat, and is a bold and remarkable headland, with cliffs 100 feet high.

Cerberus Rock, just awash at low tide, with deep water all around, and lying directly in the way of vessels to and from the Gut of Canso, is exceedingly dangerous in dark nights and foggy weather. In the daytime either breakers or a rippling over it can almost always be seen. A red buoy is moored in 15 fathoms about 100 yards south of the rock.

To avoid this danger in a vessel bound to the westward, keep some part of Green Island in sight to the southward of Cape Hogan until the easternmost church at Arichat is seen over the shingle isthmus uniting

the two peninsulas of Jerseyman Island, or until Arichat Head bears N. 9° E.; then the course may be safely shaped for the Gut of Canso.

In a vessel outward bound, take care that the course made good from the middle of the southern entrance of the Gut of Canso is not more to the eastward than S. 46° E. until Green Island appears to the southward of Cape Hogan, or until the steeple of the Arichat church is seen over the Jerseyman Isthmus, when the course may be safely shaped more to the eastward and out to sea.

Arichat Harbor, capable of containing a large number of vessels, is sheltered by Jerseyman Island, which stretches across the bay. It has two entrances, of which the western is the least difficult for strangers, although only 200 yards wide. The eastern entrance is 600 yards wide, but it lies between shoals.

The straggling town of Arichat extends nearly 3 miles along the bold and steep north shore of the harbor, where there are many wharves and stores. Of the two churches the westernmost is the largest, and the only other public building at all remarkable is the court-house, standing more to the eastward and distinguished by its cupola. It is the headquarters of the fisheries in its neighborhood, and the most important seaport, both in commerce and in population, on the Atlantic Coast of Nova Scotia eastward of Halifax. The population of the town is about 1,200, and that of the whole of Madame Island 6,000.

Water.—The usual watering place is at a spring near Huberts Wharf, where good water may be obtained on payment of a small sum. Water may also be obtained at Irish Point, from the outlet of the chain of small lakes in the rear of the town (1860).

Marache Point, on the east side of the entrance to Arichat Harbor, is quite bold to the westward, with the exception of two small rocky patches which lie off it at the respective distances of 600 and 800 yards to the NW., and on which the least water is 4 fathoms. To the northward of the point, and for some distance to the eastward, the shoal water extends 300 yards offshore.

Jerseyman Island, with the Crid Islands forming the Crid Pass, in addition to the lighthouse on its north point, has a beacon on the SE. point, for the purpose of marking the Hautfond Shoals.

Hautfond Shoals are a chain of rocky patches, marked by a red can buoy, moored in 6 fathoms, southward 200 yards from the shoal. The least water, 10 feet, is on the outermost patch, from which Moyac Point bears S. 83° E., and Marache Point N. 49° E., and the distance is nearly a mile from each of them. The other patches lie in a line from the outer one to the north side of Forest Cove; the least water on them is 21 feet, and there is deep water between them, but the safe channel for ships is outside or to the westward of them all. The beacon on the SE. point of Jerseyman Island, in line with the cupola of the convent, which stands 130 yards east of the Roman Catholic Church, will lead westward of these shoals.

Anchorage.—Capodiette Bay, 1½ miles wide, between Marache and Kavanagh Points, although open to westerly winds and to the heavy swell rolling in at times round the point from the southward, nevertheless affords a tolerably good occasional anchorage in 10 or 12 fathoms, mud bottom, the best ground being in the deepest water.

Fiddle Shoal, with 10 feet least water, lies at the outer end of the rocky bank which extends to the westward 600 yards from Kavanagh Point. There is no passage for large vessels between it and the point, which has several dry rocks off it, and shoal water all along its SW. side, to the distance of 300 yards offshore. On the north side of the point within the harbor, a reef, with only 3 feet at low water, runs off ¼ mile, which is half way across to the wharves of the town of Arichat.

Henley Ledges, which are black rocks, covered only at high water and almost always shown by breakers, lie near the SW. extremity of the rocky bank off Jerseyman Island, from which they are distant ⅔ mile. The breadth of the deep water between them and Marache Point is ¾ mile. To seaward the shallow water extends from them only 300 yards, but there is a rock awash ⅛ mile from them to the northwestward, and two others between them and Jerseyman Island, thus leaving no passage for ships. There are no good leading marks for sailing to the SW. of these rocks; but vessels will pass well to the the SE. of them, if the steeple of the easternmost church at Arichat be not shut in behind the eastern extremity of Jerseyman Island.

Pilot Rock, marked by a black buoy, is on the NW. side of the channel, and at the extremity of the shallow water off the east end of Jerseyman Island, from which it is distant 600 yards to the eastward. It is small, with 4 feet least water, and quite bold to the southward. There is no channel between it and the island for large vessels. The leading mark to clear it is De Carteret's flagstaff, near to the east end of Arichat, seen over Kavanagh Point; but this mark leads very close to the SE of the rock.

Poule Reef, with 7 feet least water, lies N. 55° E. 400 yards from Poule Islet, which is nearly united to the east end of Jerseyman Island at low water. There is a narrow channel, fit only for small craft, between the shoal and the islet; but the ship channel to the eastward of this shoal, between it and the Fiddle, is 600 yards wide, with water sufficient for the largest ships.

Directions.—If bound to Arichat from the eastward, with a leading wind, a vessel will pass the Hautfond Shoals by keeping some part of Green Island in sight to the southward of Cape Hogan until the beacon on Jerseyman Island is in line with the cupola of the convent eastward of the Roman Catholic church, and steer for it, until the lighthouse on Marache Point bears S. 61° E.; thence steer N. 63° E. so as to make a direct course towards Little Barachois at the head of Capodiette Bay; and as soon as the steeple of the westernmost church at Arichat opens a little to the eastward of the priest's flagstaff, bearing

N. 24° W., run towards it until the southern extremity of Creighton Island is seen through the Crid Pass. The vessel being then within Poule Reef, may safely haul to the westward and select a berth at pleasnre in the most roomy part of the harbor, anywhere to the north of the line from Poule Islet to Beach Point. South of that line the eastern bight of Jorseyman Island contains the Cage Shoal, with only 7 feet water, and much foul ground.

If the vessel should have occasion to go to the eastern part of the harbor, she should stand well over to the north shore before bearing up to the eastward, and run along it at the distance of 200 yards from the ends of the wharves, until after Maraohe Point has disappeared behind Kavanagh Point, when she will be to the eastward of the reef off the last-named point, and will find bold shores and plenty of water to within 250 yards of the entrance of the cove at the head of the harbor.

With local knowledge a vessel could pass eastward of the Hautfond Shoals by steering for the steeple of the westernmost church at Maraohe Point in line, bearing N. 2° E. until within ¼ mile of the point; then, after keeping away a little to pass the point, and the shoal water mentioned off its north side, they will have to beat up Capodiette Bay until the marks for running in, namely, the westernmost church, open a little to the eastward of the flagstaff, bearing N. 24° W., come on.

Crid Passage.—In approaching Arichat from the westward, the only outlying danger, besides the Cerberus Rock, is the Creighton Shoal; and this last will be avoided if, after passing the Peninsula Shoals Bear Head be not shut in behind Peninsula Point until the westernmost church at Arichat is seen to the southward of the Crid Islands; a mark which also leads clear of the Picard Reef and of all the shoal water off Creighton Island. The Crid Islands, which are small and rocky, form the north side of the Crid Pass, the whole breadth of which across to Beach Point is about 300 yards, but there are half-tide rocks off both ends of those little islands which reduce the navigable breadth of the channel to 200 yards. The extremity of Beach Point, which is all shingle, may be safely passed as near as 60 yards; but on the outside of the point the shoal water commences immediately, and continues increasing in breadth from the shore to the western extremity of the island, where it extends ⅓ mile from the cliffs.

With the necessary leading wind, bring the steeple of the westernmost church to appear through the middle of Crid Pass, or a little to the northward of Beach Point, when it will bear N. 71° E. Keep it so while running towards it, and when the vessel has arrived within ½ mile of the point, if Robin wharf and stores (on the south side of the harbor) be not already seen to the northward of Beach Point, steer a little to northward till they are so, and then steer for them N. 83° E., or so as to pass the point at any distance between 60 and 200 yards, into the harbor.

Tides.—The stream of flood comes in by the eastern entrance, running

through the harbor to the westward, and the ebb stream the contrary; but these streams are not very regular, and seldom exceed the rate of one knot.

West Arichat, situated inside of Creighton Island, is a small and secure harbor, where the fisheries are extensively prosecuted. The approach is from the westward, and over a bar, with 17 feet at low water, which extends across to the northward from Arichat Head, the west extremity of Creighton Island. The entrance of the harbor, ½ mile within this bar, is 300 yards wide between Creighton and Bosdet Points; the former being a long spit of sand and shingle, with stores and a wharf, on the north side of Creighton Island. Vessels lie immediately within the entrance in 3½ fathoms and as securely as in a dock, the harbor being closed at the east end by a bar of shingle, which dries at low water.

Directions.—Bring the wharf on the north side of Bosdet Point to bear N. 74° E., and steer for it; the vessel will then pass the bar in not less than 15 feet at low water. Continue the same course until the shingly SW. extremity of Bosdet Point and the NE. extremity of Creighton Island (at the east end of the harbor) are touching, and bearing S. 65° E., when alter course, and keep the last named marks in one exactly running towards them until Bosdet Point is 300 yards ahead; then alter course to the southward, so as to be two-thirds of the distance over from Creighton Point towards Bosdet Point, as the vessel passes between them into the harbor.

Le Blanc and Haddock Harbors.—Le Blanc Harbor has its entrance ½ mile from West Arichat and in the NE. corner of the same bay. Six feet at low water can be carried in through its very narrow entrance, and there is much more within. It is an extensive place, containing a population of fishermen and small farmers.

At the NE. extremity of this harbor is the Mousselier Pass, very narrow, between mussel beds, and only one foot in it at low water. Boats pass through it into Haddock Harbor, the principal entrance to which is from the Lennox Passage, by a very narrow channel, to the eastward of Campbell Island, but it has 20 feet in it at low water. Both these last-named harbors are occasionally resorted to by small vessels in the fishing season, but they are no use to large ships.

In the bay between Arichat Head and Peninsula Point are Deep Cove and Janvrin Harbor barred by Dorey Ledge, and only useful to small craft and boats. In the entrance of Janvrin Harbor, and 1½ miles eastward from Peninsula Point, lies Delorier Island, from which extend the rocky Bentinck Shoals. The least water on these shoals is 4 feet, but as they lie in a bay, they are not much in the way of vessels; they join the Peninsula Shoals to the westward, which, with the southern entrance of the Gut of Canso, will be described on page 172.

Creighton Shoal Buoy is rocky, and the least water, 11 feet, lies with the westernmost church at Arichat, just shut in behind the south-

ern extremity of Creighton Island; it bears S. 70° W. and is distant ¾ mile from Arichat Head. The marks for passing to the northward of it will be useful to vessels bound to and from West Arichat, and are, Bosdet Point and wharf just open to the northward of Creighton Island, bearing N. 63° E. Bear Head and Peninsula point in one, lead past it at the distance of ⅛ mile to the SW.; and the above church at Arichat, open to the southward of the Crid Islands, bearing N. 74° E., not only leads ¼ mile to the southward of the Creighton Shoal, but also clears the Picard Reef, which extends 400 yards to the westward from the south point of Creighton Island.

A can buoy, painted red and black, in horizontal stripes, is moored on the center of Creighton Shoal.

Wasting Islet and Peninsula Point, appearing like two small islands, on the edge of the bank which dries out from the SW. side of Janvrin Island, will be easily recognized, the islet being most to the NW. They both have low red cliffs to seaward, and long gravel spits at their north points; but a long bar of shingle unites the peninsula at its east end to Janvrin Island. The very shallow water extends 400 yards off Wasting Islet, with a depth of 4 or 5 fathoms, for an equal distance farther to the SW.

Peninsula Shoals are much more extensive and dangerous, running off both to the south and SE. In the latter direction the reef extends out nearly ½ mile. Ship Point and Bear Head in one, bearing N. 64° W., lead to the SW. of these shoals in 6 fathoms water; and the steeple of the chapel at Arichat and the south extremity of Creighton Island in line, bearing N. 80° E., will lead to the southward at the distance of ⅛ mile.

Thomas Shoals runs out from Thomas Head (the NW. point of Janvrin Island), ⅝ mile to the westward, with rocky and irregular soundings, from 11 to 21 feet at low water. The clearing mark for its western extremity is the eastern end of Wasting Islet, touching the south end of Peninsula Point, bearing S. 50° E.; and for its northern side the two points forming the north side of Janvrin Island, in one, bearing N. 71° E., when Campbell Island will appear just open to the northward of them.

The Janvrin Shoal, extending ⅜ mile to the westward from Janvrin Point, is a bank of sand and stones which dries out half of that distance, and has a large rock near its edge. At the distance of 1,100 yards from the point there is another rock, with 6 feet least water. The SW. side of Wasting Islet, in one with the north end of Peninsula Point, bearing S. 72° E., will lead 200 yards to the SW. of this dangerous shoal in 5 fathoms water. On the NW. side, where there are no clearing marks, it should be approached with great caution, for the water is too deep for the lead to afford much warning.

From Cape Argos to Guysborough, at the head of Chedabucto Bay, a distance of 12 miles, the prevailing features are peninsulated

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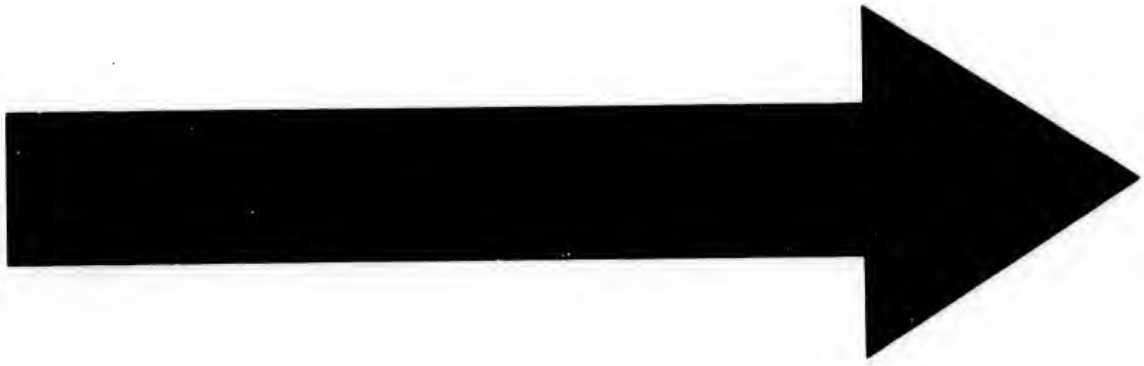

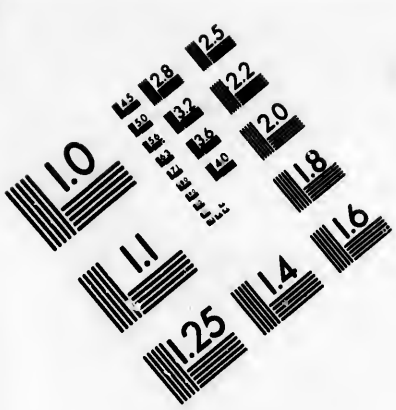

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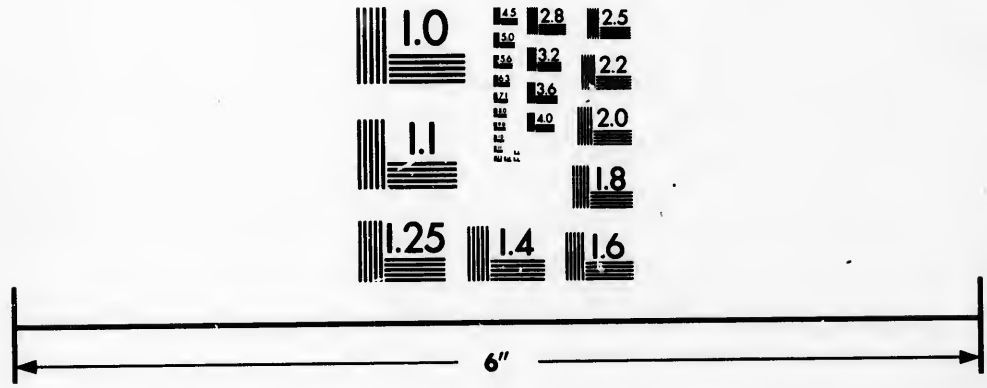

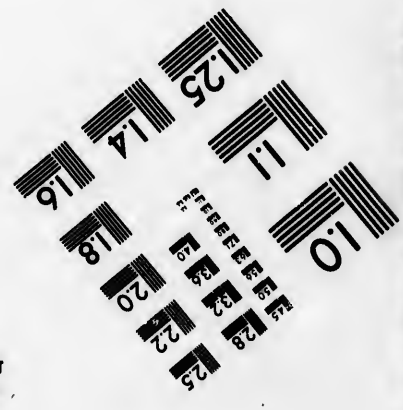

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points of drift, sand, clay, and bowlders, resting on sandstone, and presenting low cliffs to the sea. These are united to the mainland by beaches of shingle, inclosing large ponds, several of which admit boats at high water when the surf is not too heavy. In the rear of these ponds are the houses of a scattered population, subsisting by fishing and farming (1860), and situated on the southern slope of ridges rising to the height of 200 feet above the sea. From Cape Argos the coast trends SW. 2 miles to Oyster Point, whence Grady Point bears SW. 1¾ miles. The Murdoch Ledge, dry at low water, and ½ mile off shore, lies midway between the two last-named points.

Ragged Point is a rocky peninsula, forming the apex of a triangle, the sides of which are long shingle beaches, inclosing a large pond with 5 or 6 fathoms water, but boats can enter it only at high tide by a narrow outlet on its western side. It appears like an island when seen from a distance and forms the eastern point of Moose Bay, which is 2¼ miles across to Moose Point, in a west direction, and ¾ mile deep. In shape, this bay is a semicircle, with shingle beach, unbroken, excepting by the shallow outlets of ponds. It affords anchorage in from 5 to 7 fathoms, sand and mud bottom; but it can be considered safe only in fine summer weather, on account of the heavy swell which accompanies easterly gales at other seasons. The only danger to be avoided is the flat of sand which extends nearly ½ mile off the eastern side of the bay. In the remaining distance of 2½ miles, from Moose Point to Guysborough, all that requires particular notice is a rocky bank, extending ½ mile out from the shore midway between them, and on which there are 19 feet at low water.

Hydra Rock, one of the greatest dangers in Chedabucto Bay, lies directly off Grady Point, from which it bears S. 52° E., and is distant 1½ miles. It carries 12 feet least water. The part of the shelf on which there are less than 3 fathoms is only 200 yards in diameter; but there are less than 5 fathoms over a much larger space. The depth is 8 or 9 fathoms between it and the land, and 11 or 12 fathoms outside it at the distance of ¼ mile.

During the heavy swell from the eastward, so frequent in this bay, the position of this rock is shown by heavy breakers; at other times it is exceedingly dangerous, especially to vessels approaching it from the SW., as on that side there are no good leading marks. The mark for passing to the SE. of it is Thomas Head, N. 15° E., open east of Cape Argos.

LENNOX PASSAGE.

Lennox Passage, between Cape Breton Island and Janvrin and Madame Islands, is very intricate, and 15 miles in length, with a low-water depth of 18 or 19 feet in the shallowest part. It is a safe and convenient channel for coasting vessels, avoiding the heavy swell in Chedabucto Bay, and affording them an advanced anchorage, from which to

start with a fair wind when bound out to sea. These vessels, usually not exceeding the draft of 10 or 12 feet, frequently run through with a leading wind, choosing their time of tide; but large vessels seldom attempt it, even with the assistance of pilots.

The Eastern Entrance of Lennox Passage, between Cape Round and Mark Point, is 2¾ miles wide. The shoals off St. Peter Bay occupy much of that space, but still leave a clear channel a mile wide between them and Cape Round. As this channel leads to the only anchorage (either off the north side of Bernard Island, or off the eastern entrance of Poulament Bay, page 176), which a stranger could venture to run for, on the approach of bad weather in this very dangerous neighborhood, an accurate knowledge of it becomes of considerable importance.

Horsehead Shoal is rocky, irregular in shape, and of great extent, and the outermost danger off St. Peter Bay. Besides several shallow patches occasionally shown by breakers, there are the Three Rocks near its northern side which only just uncover in low tides, and on which the sea usually breaks heavily. It is marked by a can buoy, painted red, at its southern extreme; by a black spar buoy at its eastern extreme, another black spar buoy at its northeastern extreme, and by a red spar buoy at its northwestern extreme. There can be no occasion to approach this dangerous shoal nearer than the depth of 10 fathoms, as the channel between it and Cape Round is a full mile wide and carries from 5 to 19 fathoms water.

Samson Rocks lie N. 24° W. ½ mile from Horsehead Shoals. Two of these rocks dry at low water, and have a considerable extent of shoal around them. The shoal surrounding Samson Rocks is marked by a can buoy, painted red, at its southern extreme; by a red spar buoy at its northern extreme; and by a black spar buoy at its eastern extreme. A red spar buoy is moored at the west extreme of the shoal ground off Mark Point.

St. Peter Bay, which is 2 miles wide, opens immediately to the northward of the Samson Rocks and Horsehead Shoals, and may be approached either east or west of those dangers. It has excellent anchorage, especially rande-grève on its eastern shore; but it is rendered almost inacc ble by the numerous rocky shoals scattered over the bay. Red spar buoys are moored as follows, one at the western and another at the northwestern extreme of the spit, ⅔ mile northwestward of Mark point; and one at the northern extreme of the spit on the western side of Grande-grève. Black spar buoys are moored, one on each of the small detached shoals ½ mile westward of Mark Point; two on the eastern side of the detached shoal, ¾ mile northwestward of Mark Point, one at the southeastern extreme of the detached shoal bearing north and one at the eastern extreme of the shoal bearing N. 38° W., both distant nearly a mile from Mark Point. A red and black spar buoy is moored on the rock bearing N. 80° W. distant 400 yards from Jerome Point Lighthouse. The principal set-

tlements are at Grande-grève and along the south side of Jerome Point, a high headland projecting from the NE. side of the bay; and rising to the summit of Mount Granville, on which the remains of an old fort may be seen, 190 feet above the sea. Vessels usually anchor in the NE. corner of the bay, within Jerome Point.

St. Peter Canal.—This canal which connects St. Peter Inlet with the bay of the same name is a lock canal necessitated by the difference of height of the tides in St. Peter Bay and Bras d'Or lake. Its length is about ¼ mile, and has a depth of 18 feet; the breadth at the entrance is 59 feet and in its narrowest part is 48 feet. In entering, it is necessary to make a sharp turn; the same in leaving. The canal has a double curve, which increases the difficulty of passage. There is a drawbridge at the northern end and a lock at the southern, the length of the lock is 200 feet. The level of the water in the lock is always less than that in St. Peter Bay. The difference at high water is 5 feet, and at low water 1 foot. The sides of the canal are cut in the rock and supported with joists. On each side there is a small path; the banks of the canal inclined and held at an angle of 30°. There are mooring buoys at both extremities of the canal.

Bourgeois Inlet.—Crossing the mouth of St. Peter Bay several remarkable cliffs of red clay will be seen immediately to the westward of it; the westernmost of them are on Bisset Island, which forms the east point of the narrow entrance to Bourgeois Inlet, an extensive arm of the sea, with 12 feet at low water in its mouth. The stores and wharves at Mr. Bisset's establishment, and the chapel on the east side, a short distance within the entrance, will point out this place to strangers (1860). The fisheries, ship building, and as yet limited agriculture, give employment to a number of persons, principally Acadians, who are settled around the inlet.

Ouetique Island, which lies one mile to the SW. of Bourgeois Inlet, is remarkable, being small, precipitous, dark looking, comparatively high (about 50 feet), and with a few pine trees upon it; the passage between them is full of dangers, amongst others, the Philip Rocks, which are almost always uncovered.

Cascarette Island, which lies a long ½ mile to the westward of Ouetique, is much larger, not so high, wooded, with low cliffs at its NE., and a sandy point at its SW. extremity. The shallow water does not extend farther than 200 yards from the south point of either of these islands, but there is a half-tide rock between them, from which shoal water extends 400 yards to the SW.

Goillon Reef lies ½ mile SW. of Cascarette Island, leaving a clear channel into the extensive inlet of Conteau, off the mouth of which it lies. This reef dries at half tide. The mark for leading to the southward of it is to keep Moulin Point open to the southward of Birch Point, bearing S. 83° W.

Indian Creek and Couteau Inlet.—The common entrance to Indian

Creek and to Couteau Inlet is $\frac{7}{8}$ mile wide between Cascarette Island and the east end of Birch Island. The inlet runs in 3 miles to the NW., and is navigable for large vessels.

Birch Island forms the north side of the main passage for the remaining distance of a mile to Grandigue, in which interval the only detached danger is Birch Shoal, off Birch Point.

Cape Round, the southern point of the eastern entrance of Lennox Passage, is a remarkable cliff of red clay 60 feet high, forming the NE. point of Madame Island. The shallow water, which here runs off only $\frac{1}{4}$ mile, widens in proceeding to the northwestward past the long shingle beach of Goulet, and for a large vessel must be considered continuous to the NE. extremity of the Gabion Shoal, distant 2 miles NW. from Cape Round.

Gabion Shoal is rocky, and the least water, 5 feet, is on the Morris Rock, near its NW. angle. The shoal is $\frac{3}{4}$ mile in length, and so lies across the extremely intricate anchorage called the Goulet, that small craft only can pass between it and Goulet Beach, from which it is distant $\frac{3}{4}$ mile to the northward.

The marks for leading to the eastward of the eastern end of this dangerous shoal, together with the shoal water off Goulet Beach, are the chapel steeple at Bourgeois Inlet and the eastern point of Bisset Island in line, bearing N. 41° W.; Cascarette and Ouetique Islands, touching and bearing N. 80° W., clear its NE. point; and Eagle and Bernard Islands touching, and bearing S. 74° W., will lead clear along its north side, but must not be followed much beyond it because of the Descousse Shoal, which is separated from the Gabion Shoal by a channel only $\frac{1}{4}$ mile wide. The channel, which carries 8 or 9 fathoms water, leads towards the Goulet Anchorage, and which, as above mentioned, lies to the westward of Goulet Beach, and which is accessible to small vessels only through narrow channels between the shoals.

The **Descousse Shoal** extends $\frac{1}{2}$ mile to the eastward of Bernard Island, and stretches across to Gabion Point, so as to form the bar of Discousse Harbor.

Descousse Harbor is formed by Bernard Island, the several parts of which, united by beaches, extend for nearly a mile along the shore of Madame Island. The entrance from the eastward is by a very narrow channel, with 7 feet in it at low water, and passes close to the flagstaff, stores, and wharf at the NW. extremity of Gabion Point.

The steeple of the chapel, and the other buildings of the village on the shore opposite the island, will immediately point out this place to strangers. It is a secure and very pretty little harbor for the small vessels by which the fisheries are extensively prosecuted.

Poulament Bay is a secure and capacious harbor, with three entrances formed by Eagle and Crow Islands. Poulament Islet, small, low, round, and wooded, lies within Eagle Island, and together with the shallows, divides the bay into two parts, of which the eastern di-

vision, leading to Poulament Creek, containing most of the houses, and affording the most roomy anchorage, in 4 or 5 fathoms, with mud bottom, is the most frequented. An equal depth might be carried into the bay if the channel were buoyed, but the shoals extending in opposite directions from Bernard and Eagle Islands so overlap as almost to form a bar, over which from 13 to 17 feet, according as it may be low or high water, are all that can be insured to a stranger, running in with the leading marks astern; namely, Cascarette Island and Cordeau Point, touching and bearing N. 15° E. Vessels drawing too much water, or not wishing to run in, may safely anchor in the roadstead outside the bar.

Hawk Islet is united at low water to the east end of Eagle Island and forms the NW. point of eastern entrance to Poulament Bay; it is bold to the northward, but to the eastward a shoal runs off towards Bernard Island to the distance of 400 yards.

Tides.—The tidal streams are weak in this bay, and seldom exceed a knot in the channel off its mouth.

Directions.—To the foregoing brief description the following directions are added for the use of vessels desirous of shelter on the approach of bad weather; and especially at the commencement of winds from between the south and east, as they seldom continue beyond a very few hours without bringing thick fog and rain.

Pass Cape Round at any distance between ½ and ¾ mile, steering NW. until Ouetique and Cascarette Islands touch; then steer towards those islands N. 80° W., or so as to keep them touching, until Poulament Islet appears just open to the northward of Bernard Island; and then towards the last-named mark, keeping the islet just open until the steeple of the chapel at Bourgeois Islet comes in line with the eastern point of Ouetique Island, bearing N. 21° E. The vessel will now be in about 9 fathoms, with mud bottom; and if she bring up with the last-mentioned marks on, will be distant more than 200 yards from the shallow water off the north side of Bernard Island, and in safe anchorage, being sheltered from SE. winds by the Descousse and Gabion Shoals, and by land in every other direction.

If the anchorage off the entrance of Poulament be preferred, then, instead of anchoring when the steeple of the chapel at Bourgeois Islet and the eastern point of Ouetique Island come in line, alter course to west, or as may be found necessary to open out the north point of Crow Island a little to the northward of Hawk Islet. Having done so, run towards them, S. 77° W., until the steeple at Descousse comes in one with the high-water western extremity of Bernard Island when the vessel will have arrived within 300 yards of her anchorage. Continue the course until Poulament Islet and Eagle Island close, and when they touch Cordeau Point will either be touching, or only just shut in behind the western end of Cascarette Island, bearing N. 15° E. Round to, to the southward, with these last-named marks on, and bring up, either in

7 fathoms, with the northern extremities of Crow and Hawk Islands in one; or a little farther in with the two points on the north side of Bernard Island in one; there the depth will be 6 fathoms, and the bottom in both places mud.

If the vessel does not draw more than 13 feet water she may safely run into Poulament Bay by keeping the leading marks on astern as she runs from them (namely, Cordeau Point and Cascarette Island, touching or very slightly open), and when the south side of Crow Island appears in sight to the southward of Eagle Island she will be within the bar, and may bring up in 4½ fathoms, mud, and in quite a secure harbor.

The Western Entrance, between Rabbit and Janvrin Islands, is a mile wide, but the navigable breadth is reduced to ½ mile by the Macdonald Shoal, a bed of rocks, with 5 feet least water, and extending nearly ¾ mile along the northern shore of Janvrin Island from which it is separated by a narrow and shallow channel. This dangerous shoal, as well as the reefs off Turbalton and Thomas heads, must be carefully avoided in entering the passage. The west end of the shoal is distant ½ mile north from Thomas Head, which in line with Janvrin Point will just lead clear of it to the westward. These marks are distinct and good; but when they are in line it may be observed that a small part of Wasting Islet will be seen to the westward of Janvrin Point, and must not be mistaken for it. In standing towards the shoal, keep the last-named point in sight, and there will be no danger.

Anchorage.—The anchorage in this entrance of Lennox passage is spacious and secure, in from 5 to 7 fathoms, anywhere to the northward of the Macdonald Shoal; but the best berth is off Cary Passage, at the east end of Rabbit Island, in 7 fathoms, mud, and where the main channel is a mile wide and free from danger. It is only necessary to observe that the shallow water extends 200 yards off the south shore of Rabbit Island and 400 yards off the east point of entrance of Cary Passage, where there is a rocky patch, with 10 feet least water 300 yards offshore.

Directions.—Entering Lennox Passage from the westward, Campbell Island will be seen from the anchorage just mentioned, and at the distance of 1½ miles to the eastward. The navigable breadth of the passage is there reduced to 600 yards by Fish Shoal, which is rocky, with 10 feet least water, and lies ¼ mile off a small cove of Cape Breton Island. From thence the passage becomes intricate. The following leading marks, with brief directions, will enable any person who can recognize the objects named to take a vessel through with a fair wind:

Before arriving at Fish Shoal, open out Burnt Point a little to the southward of Low Point, bearing N. 63° E.; keep them so, and they will lead to the southward of that shoal and for a mile farther to the eastward. When Thorn Island is just about to disappear behind Glasgow Point alter course, and steer east, or towards Martinique Cove, until

Burnt and Seal Islands close and appear to touch, when they will bear N. 60° E. These last-named points kept exactly touching will lead through between the shoals as far as Burnt Point, where the channel turns to the NE., between that point and the Burnt Islands, and where the deep water is only 100 yards wide. Passing midway through this narrow opening, and with the aid of the chart, rounding the Burnt Islands to the north and east, steer between them and Seal Island until the eastern point of Burnt Island comes in one with Heron Point, about S. 52° W.; then alter course instantly to N. 52° E., keeping the last-named points astern and exactly touching, and they will safely lead through between the Middle Ground and Seal Island, where the channel is again only 100 yards wide.

The Middle Ground is rocky, with 4 feet least water, and when the channel between it and Seal Island is fairly entered, steer half a point more to the northward, N. 46° E., or so as to keep Heron Point only just shut in behind the eastern point of the Burnt Islands, until Grandigue Point (the land, not the shingle spit) and Hawk Islet are touching, and bearing N. 85° E. Now keep to these last-named marks, and they will lead to the excellent anchorage off the ferry at Grandigue, where there is room enough for the largest ships in from 5 to 8 fathoms, mud bottom. The long spit of shingle, from which the name is derived, runs out from Grandigue Point nearly 400 yards across the channel, and shelters the anchorage completely from the eastward. A great part of the spit is covered at high water, but can generally be discerned by the rippling of the tide. At Grandigue there are extensive gypsum quarries, several tolerable farms, and the ferry by which the mail crosses the passage on its way to Arichat.

The only other danger here is the Ferry Reef, which lies to the NW. of the spit, leaving a deep and clear channel 400 yards wide. This reef is nearly dry at low water, and very much in the way here, as it may be said to extend halfway across the passage, being separated from the northern shore by a channel so narrow as to be only navigable by boats or very small craft. On the southern edge of this reef, and also on the northern extremity of Grandigue Spit, Birch and Ouetique Islands are just touching, and bearing N. 70° E.; and therefore, to clear the reef, keep Ouetique Island open; and to clear the spit, partly shut in behind Birch Point.

The ship channel, after passing to the southward of the Ferry Reef, turns to the NE., between it and Grandigue Spit, and then around the latter to the east and south, forming a crooked, and, for a stranger, a difficult pass.

Approaching the anchorage at Grandigue from the westward, steer with Grandigue Point and Hawk Islet touching, as already directed, until the south point of Cascarette Island opens out a very little to the southward of Birch Island; and then on this last-named mark, which will lead well clear of the Ferry Reef; and when the Tickle Chan-

nel to the westward of Birch Island comes open, and bears to the northward of N. 21° E., steer towards it until the southern extremity of Ouetique Island is seen over the beach of Birch Point, bearing N. 71° E. Run towards the last-named marks till Grandigue Spit is passed, which will be when the west end of Birch Island bears north; then alter course instantly to SE., or so as to make a direct course towards the middle of the western entrance of Poulament Bay, and continue on that line until the north ends of Crow and Eagle Islands come in one; then towards Ouetique Island until the steeple of the chapel at Discousse is in line with the NE. point of Hawk Islet; and lastly, east, or so as to pass Hawk Islet at the distance of 200 or 300 yards. The vessel will then have arrived at the comparatively wide and open part of the passage off the eastern entrance of Poulament Bay where she may anchor or proceed to sea.

Tides.—It is high water, full and change, at Grandigue, in the Lennox Passage, at 7 h. 55 m.; springs rise 6¼ feet, neaps 4½ feet. The tidal streams are often irregular, but when not so, change about three-quarters of an hour after high and low water by the shore; the flood coming in from the eastward, they are stronger round the spit at Grandigue than in any other part of the passage, but their rate even there seldom exceeds 2 knots.

Gut of Canso.—The length of the passage through the gut, from the lighthouse on Eddy Point, at the south entrance, is 14½ miles; and its least breadth, between Balache Point and Cape Porcupine, is 900 yards. The depth of water in the channel is seldom less than 15 fathoms, and in the deepest part, off Cape Porcupine, it amounts to 32 fathoms. This great depth, the strength of the tides, and the rocky or gravelly bottom, render the anchorage unsafe, excepting at the places hereafter to be described.

Coast.—Excepting at Ghost Beach, and for a short distance below Port Hawkesbury, the general character of the shore on either side is high; the land rising from it, more or less abruptly, to the summits of ridges of considerable elevation. Cape Porcupine, a precipitous headland on the western shore, 640 feet high above the sea, is the most remarkable feature, and the scenery in its vicinity is of great beauty. There are increasing settlements on either side, especially at the several anchoring places, where supplies may be obtained.

Cape Argos, distant 2½ miles to the southward of Eddy Point, will be easily recognized, being a small but high peninsula, bare of wood, with red cliff, and united to the mainland by a low isthmus of shingle. Off the point of cliff next to the north of the cape, and distant ⅓ mile from it, a reef runs off towards the Argos Shoal, which it so nearly joins as to leave no passage for vessels of large draft. Eddy Point and Flat Head, touching and in line with the east side of a hill behind the latter, bearing N. 41° W., lead 300 yards to the eastward of these dangers in 7 or 8 fathoms. Flat Head is the NE. point of Bear Cove, and if it be

wished to pass outside of the Argos Shoal at greater distance, let the above-named marks be kept proportionally open.

Eddy Point, the southern point of entrance of the gut, is of sand and gravel, inclosing a small pond.

Eddy Spit, of sand and stones, runs out ¼ mile to the NE. from high-water mark on Eddy Point, and is almost always shown by the rippling of the tide. A large black can buoy is moored in 9 fathoms at the eastern extremity of the shoal off Eddy Point.

Martin Shoal, 1¾ miles from Eddy Point, is of rock, and extends nearly 350 yards off shore. Melford and Critchet Points in one, bearing N. 61° W., just lead outside its edge in 4 fathoms.

Bear Reef has from 6 to 9 feet at low water over large rocks, and extends nearly 300 yards southward from Bear Island. Off Bear Head also there is shallow water, extending nearly 400 yards to the southeastward. Great caution should be used in approaching these dangers, for the water is too deep near them for the lead to afford much warning, and there are no good clearing marks.

Bank.—Crossing again to the western shore of the gut, at Critchet Cove, there is a shallow bank of mud and sand, on which small vessels frequently anchor, but of which vessels of large draft should beware. Its outer edge, in 5 fathoms, is nearly ¼ mile off shore.

The Ship Rock has 6 feet least water, and is distant ¼ mile northward from Ship Point, and 140 yards off shore. Ship Point and Bear Head in line, bearing S. 63° E. lead only 40 or 50 yards outside of it, and therefore, in standing towards it, tack before the head and point come in line.

Cahil Rock lies on the western side of the gut, and is distant ¾ mile to the SE. from Holland Cove, and 120 yards off shore. It is dry at low water, but becomes dangerous when covered. Roger Point in one with the NE. side of Pirate Island (the latter being seen over the low shingle rock of Pirate Point), and bearing N. 61° W., leads clear outside of it at the distance of 120 yards.

The Stapleton Shoal is rocky, and extends from Port Hawkesbury and Stapleton Points 300 yards to the westward. At that distance off shore there are only 16 feet at low water, but the depth increases almost immediately to 5 fathoms, the edge of the shoal being very steep.

Premier Shoal, of rock and sand, with 13 feet least water, is a middle ground in the entrance of Port Hawkesbury, marked by a can buoy painted red and black in horizontal stripes, moored on the center of the shoal. Vessels may pass on either side of it, but to the northward is the widest and deepest channel. Port Hawkesbury Point and the western extremity of Pirate Island in one, bearing S. 11° W., will lead clear outside or to the westward of this shoal, in 5 fathoms; therefore, vessels standing in towards Port Hawkesbury, or anchoring off its mouth, should be careful not to shut in the whole of the island behind the point.

The Dixon Rock, reported to have only 6 or 8 feet over it at low water, but on which not less than 12 feet could be found, is distant 140 yards from Makeen Point, and S. 55° W. 240 yards from the western point of Port Hastings. This rock is much in the way of vessels approaching or leaving the anchorage off Port Hastings, but will be avoided if the whole of the bridge over the cove be not shut in behind its western point.

Balache Rock is nearly dry at low tides, but as it is within the line uniting Balache and Mackeen points, it is not much in the way of vessels. It lies 200 yards eastward of the end of Balache Point, and 100 yards off shore.

The Madagascar Rock, dry at low water, lies directly abreast the Balache, and not quite 100 yards off the west shore under the highest part of Cape Porcupine. The rippling of the tide over this rock can in general be seen; nevertheless its situation, off a projecting point in the narrowest part of the passage, nearly in the full strength of the tide, and at a part celebrated for sudden flaws of wind from various directions, renders it extremely dangerous.

ANCHORAGES IN GUT OF CANSO.

Inhabitants Bay, situated to the northward of the south entrance of the Gut, is about 2½ miles wide at the entrance, between Bear and Turbalton Heads. In addition to Inhabitants Harbor at its head it contains the following useful anchorages:

Seacoal Bay, 1½ miles from Bear Head, will be readily known by the high cliffs of Carleton Head, which forms its NE. point. This spacious anchorage, secure in all winds excepting those from SE., is very convenient for vessels bound in through the Gut, and detained by strong NW. winds. The depth in the mouth of the bay is 5 fathoms, the bottom of mud, and there is no danger in the way.

Turbalton Bay is a small but secure anchorage to the northward of Turbalton Head, and between it and Evans Island. In approaching this anchorage the only danger to be avoided is the reef off Turbalton Head, which is partly dry at low water, and runs out 550 yards to the westward. Janvrin and Peninsula Points in one, bearing S. 41° E., or the two extreme points on the western side of Evans Island in one, bearing north, will just lead clear to the westward of this reef in 4½ fathoms. There is no other danger in the way excepting the shallow water extending from the shore on either side, and from the small islets in the bottom of the bay. To avoid the latter, in a vessel of large draft, go no farther in than the line of Turbalton Head and Cape Argos touching where the depth is 4½ fathoms at low water. With the cape a little open to the westward of the head the depth is 5 fathoms; in either case the bottom will be of mud, and the reef will break off the swell from the southward.

Inhabitants Harbor is not at present much frequented, being out of the line of general navigation, but it has space and depth of water sufficient for a large number and any class of vessels, and is quite secure at all seasons. The southern side of the harbor is formed by islands inclosing the basin in which vessels might securely winter, but of which a minute account would only confuse a stranger. The channel leading into the harbor, between Long Ledge and Evans Island, is nowhere less than 300 yards wide from 3 fathoms to 3 fathoms on either side, and carries 10 or 12 fathoms water with mud bottom.

Inhabitants River is navigable for vessels by a narrow and winding channel for several miles, while boats can ascend to the bridge, a distance of 7 miles. There are some good farms on the banks of this river but the shores of the harbor are as yet very thinly settled, and present a very barren appearance. There is said to be workable coal at Little River just outside the harbor's mouth.

Directions.—To avoid Long Ledge, which is distant about 600 yards from Evans Island, and to run into Inhabitants Harbor far enough for safe anchorage proceed as follows:

Approaching from the SW. through Inhabitants Bay, steer so as to pass the west end of Evans Island at a distance of 400 yards, or by the lead in 6 fathoms water, remembering that the bank on either side is very steep for vessels drawing more than 10 feet water. Follow the shore of the island round to the NE., but approaching it at the same time very gradually, so as to pass Steep Head, its northern extremity, at a distance of 200 or 300 yards. Having passed Steep Head the vessel will be in safe anchorage, but she may go farther in without danger by simply keeping in mid-channel as she runs towards Bumbo Island, which will be seen (small, round, with low clay cliffs) bearing N. 61° E., and distant nearly a mile from her track while passing Steep Head as just directed.

As the vessel proceeds, the channel between Round and Freeman Islands, leading into the Basin, will be passed; and when she has arrived within ¼ mile of Bumbo Island, the main channel between it and Indian Point, and leading into the harbor to the north and east, will appear open, as well as the entrance of Inhabitants River, the entrance to which lies ¾ mile to the northward. The shallow water extends 200 yards off Bumbo Island, and the main channel, which, passing to the NW. of it leads into the wide expanse of the harbor to the eastward, may be followed without difficulty with the aid of the chart. It is, however, not necessary to go beyond Bumbo Island for good anchorage, as that may be found everywhere in the channel; and if the depth of water there be considered inconveniently great, the bight to the southward of Bumbo Island, between it and Freeman Island, affords a good berth in a moderate depth of water.

Tides.—The tides in this harbor are weak, seldom exceeding a knot in the entrance, where they are strongest.

Pirate Harbor.—The anchorage at this port, although deep enough is inconveniently small for large ships, but safe and good for small vessels. The best berth for anything larger than a fishing schooner is in 7 or 8 fathoms, mud bottom, with Pirate Island bearing SE., distant 200 yards. Vessels passing through are reported by telegraph from Pirate Harbor.

Pirate Island, small, rocky, and united to the mainland by a beach of shingle, forms the SE. point of Pirate Harbor; and all within it and a line drawn across to the wharves on the NW. side is dry at low water, excepting a narrow boat channel carrying 3 or 4 feet water, which leads to the bridge across the cove at the head of the port, and about ¼ mile from its entrance.

Port Mulgrave.—On the western shore, and nearly opposite to Port Hawkesbury, is an excellent anchorage, especially in NW. winds. The best berth is in 6 or 7 fathoms, with mud bottom, and directly off the mouth of the cove, Macnair Point, in line with Port Hastings, should then be distant about 400 yards. There is a good watering place here, with wharves for landing at all times of the tide; also a fine settlement, near which a small English church has been erected.

Port Hawkesbury is a large cove terminated by a bridge nearly a mile in from the sea. It is completely open to NW. winds, which blow directly through the Gut, causing at times a heavy sea, excepting when well in towards the head of the harbor, where the anchorage is quite secure, out of the stream of the tides, and in 3½ fathoms, mud bottom.

There is a fine settlement with two chapels on the NE. side of the harbor, a patent slip capable of taking vessels of 1,000 tons, also stores and wharves where vessels may receive repairs, or winter in safety.

Anchorage.—The roadstead off the mouth of this harbor, and outside of the Premier Shoal, is much frequented by vessels detained by SE. winds, but the riding is very rough there in winds from the opposite quarter. The depth is from 7 to 9 fathoms, over sand, gravel, and mud bottom, and the only direction necessary is to keep Pirate Island in sight to the westward of Port Hawkesbury Point.

Steam vessels run twice a week from Pictou to this port.

The United States is represented by an agent.

Directions.—Vessels of less than 12 feet draft may run in to Port Hawkesbury without difficulty, passing over the Premier Shoal at all times; but vessels of larger draft should prefer the channel to the north of that danger.

Being outside the shoal, bring Cavanagh Point, composed of low sandstone and sandy beach, on the NE. side of the harbor, to bear S. 63° E., when a large store built on piles, and farther up the harbor, will appear in line with it, and the end of the wharf will be just in sight. Run in with these marks on until Port Hawkesbury Point bears S. 43° W., when the vessel will be within the Premier Shoal, and may sheer to the southward into the middle of the harbor. The channel to the south-

ward of the shoal is neither so deep nor so wide as the other, but it is more convenient for entering the harbor with southerly winds.

Port Hastings, on the eastern shore, will be known at once by the conspicuous cliffs of white gypsum, which are 120 feet high on the NW. side and a short distance within the bridge near its entrance. The head of the port, which forms a cove, is dry at low water.

The town, in addition to the post-office, contains a large and conspicuous telegraph office, whence the electric cables cross the Gut to the south shore. Boards of warning not to anchor near the line of the cables are erected on both shores.

Anchorage.—The anchorage at Port Hastings is convenient and safe in all winds. In northerly gales the swell, deflected by Cape Porcupine, causes rather uneasy riding, but it does not endanger vessels well anchored in a clear berth.

The only directions necessary, both for avoiding the Dixon Rock and choosing a good berth, are to keep the cove open, so that the whole of the bridge as well as the white cliffs above it may be seen. Vessels of large draft should keep Balache Point well open, and go no nearer in than 7 or 8 fathoms water; but smaller vessels may anchor in 4 or 5 fathoms, with mud bottom. The bottom is more and more sandy farther out towards the steep edge of the bank in 10 fathoms, after which it becomes rocky in the deep water and strength of the tide.

Tides.—The tidal streams at the anchorage are eddies, running often irregularly, but generally in a contrary direction to the main stream in the channel, and at a rate seldom exceeding one knot. These eddies render it advisable to moor, especially in large vessels having occasion to remain some time (to water for instance), in which case one anchor should be laid well out to the southward in 9 or 10 fathoms water.

Water.—There is an excellent watering place directly opposite Port Hawkesbury, in the bay between Cape Porcupine and Keaton Point.

Anchorages.—The other anchorages in the Gut are less secure, either from exposure to particular winds or loose holding ground. On the eastern shore, off Madden Cove, and Doolan Pond, NW. of Bear Island, and east of Bear Head, vessels frequently anchor to wait for wind or tide in fine summer weather; as they do also at Byers, Critchet, and Eddy Coves, on the opposite side of the channel.

Vessels may anchor for a tide and in fine weather near the lighthouse at the north entrance, and also on the western shore of the Gut off Mill Creek, which is another occasional stopping place; but neither of these can be recommended, since they are both exposed to northerly winds, which often commence suddenly and send in a very heavy sea. Moreover, off Mill Creek irregular eddies render it very difficult to keep an anchor clear.

Directions for the Gut of Canso.—With the foregoing description of the dangers and anchorages, and the aid of the chart, there will be little or no difficulty experienced in the passage of the Gut of Canso,

either with a leading or a beating wind. In the latter case, and when bound to the northward into the gulf, the aim should be to gain the anchorage at Port Hastings, and to start from thence with the turn of the tide, so as to secure a good offing in St. George Bay before the ebb makes.

When bound through the Gut to the southward, the distance from Cape George to the light at the north entrance of the Gut is 20½ miles. The approach in this direction, through St. George Bay, is unattended with difficulty or danger, excepting when fogs or snowstorms hide from view the light which has been judiciously placed at its northern entrance. The soundings are then the only guides, and they will be found sufficient, in all ordinary cases, for the safety of vessels prudently conducted, with their leads going. In vessels so circumstanced the endeavor should be to strike soundings on the bank off Long Point, and then to follow its ledge along the shore of Cape Breton Island, in the low water depth of 10 fathoms, to the entrance of the Gut. It is seldom so thick especially in a breeze of wind, but that some part of the shore will be seen before the vessel has run far after entering so narrow a strait. With a beating wind, she should board off and on the same shore, until soundings are struck (in the board to the westward, and after crossing the deep water), on the edge of the bank off Cape Jack, where, if it be night, and the fog so thick that the light can not be seen, or if the tide be nearly done, it will be advisable to anchor, and wait for a change. The ground there is not good, but it is out of the strength of the tides, and an anchor will hold in moderate weather. The anchorage ½ mile to the SE. of the lighthouse, and on the same side of the channel should be preferred if attainable. There are some spots of mud there, in which an anchor holds well in 7 to 9 fathoms, and where the strength of the tide is not great.

Vessels outward bound, and proceeding through the Gut to the southward, very frequently meet a south or SE. wind, with its usual accompaniments of fog and rain; in which case the roadstead off Port Hawkesbury will be found the most roomy and convenient anchorage. Eddy Cove, from its more advanced position at the entrance of the Gut, offers, to vessels sailing with the first of a fair wind, a better chance of clearing Chedabucto Bay and the Canso Ledges before dark; but it can only be recommended in fine settled summer weather, for the ground is not good, and the anchorage is much exposed on the occurrence of a sudden change of wind. Turbalton Bay is much more secure, but it is rather small for a large and weakly manned vessel to weigh from in the event of a strong wind setting in suddenly from the westward.

Tides.—Ordinary springs rise 4 feet, neaps 2 feet; but extraordinary tides may rise 6 or 7 feet, or only 2 feet, owing to the irregular influence of unknown causes; probably strong winds at a distance. The rise and fall of the tides on the shore usually continue through nearly equal periods of time, but the duration of the tidal streams (the flood being

to the northward and the ebb to the southward) varies from one to 4 hours after it is high or low water by the shore, even in the fine weather of summer; whilst in the blowing weather, so frequent on the approach of winter or in early spring, they are reported to be still more irregular, running at times in the same direction for several days in succession; but this never occurred during the Admiralty survey.

The rate of these streams off Cape Porcupine, where it is most rapid, is ordinarily about 4 knots; but is increased occasionally to 5 knots by strong winds. At most of the anchorages, and under almost every point, there are eddies, usually running in the opposite direction to the main stream outside, but at a much inferior rate, and they render great attention necessary to insure a clear anchor.

The set of the flood stream from the north entrance of the Gut is nearly towards Cape St. George, diminishing rapidly in strength as it expands in advancing to the northward. It is weak in the western part of St. George Bay, sweeping round it to the NW., with slight indraughts towards Pomquet, Antigonish, etc. The ebb stream will be found setting in the contrary direction.

On the eastern side of St. George Bay the flood stream from the Gut is usually met by a much weaker and contrary stream of flood, coming from the NE., along the west coast of Cape Breton. These opposing flood streams will be found, in general, to unite somewhere off the Judique Shoals, and then to set towards the NW. The two corresponding ebb streams as generally diverge from about the same place; the one setting towards the Gut, with increasing strength, as it proceeds to the southward, and the other in the contrary direction, towards Port Hood. All, however, that has been said respecting these streams must be understood as of usual, and not of constant occurrence, since they must necessarily partake of the irregularity in the strength and duration of the tidal streams of the Gut of Canso. Nevertheless, it will be highly useful, and may materially aid the progress of the vessel, to bear in mind the usual set of these streams.

St. George Bay is of great extent, being 13½ miles wide at entrance, between Cape St. George and Henry Island, and 20 miles deep, from the same cape to the Gut of Canso. It is traversed by all the numerous vessels which pass in or out of the Gulf by its southern entrance, and hence its navigation assumes a more than usual degree of nautical importance.

Anchorage.—Half a mile to the SE. of the lighthouse at the north entrance, and on the same side of the Gut, there is tolerable anchorage in all but northerly winds. Vessels frequently stop there to wait tide.

Havre Bouche is a small but convenient harbor for schooners, lying between Cape Jack and the lighthouse at the north entrance. It has 4 feet at low water in its narrow entrance between stony points, having no bar outside, and 13 or 14 feet within. There is a small stream at its head. The shores and neighborhood are well cultivated, and the

church will be seen near the shore, and a mile to the westward of the entrance, or half way towards Cape Jack.

Jack Shoal.—Cape Jack, a cliff of red sandstone 45 feet high, is the most prominent headland on this part of the coast. Jack Shoal runs out from the cape one mile to 3 fathoms water, and 1½ miles to 5 fathoms. Between the distances of ½ and ¾ mile off shore there are two large patches of rock, which dry at half tide, leaving a passage carrying 11 or 12 feet water for small craft between them and the cape.

Caution.—The Jack Shoal has often proved dangerous to vessels in thick weather, when it should be approached with great caution, especially from the eastward, the soundings on that side being irregular and deep near the shoal, but nevertheless quite sufficient to insure safety if the lead be kept going. On the outer point of the shoal, in 3 fathoms, the lighthouse at the north entrance of the Gut of Canso bears S. 72° E. 3⅛ miles. If the light can not be seen the shoal should not be approached nearer than the low water depth of 10 fathoms.

Little Tracadie Harbor has only one foot at low water over its bar. Its entrance is in the bay between Barrio Head and Cape Blue, the former being a cliff of red sandstone 110 feet high; the latter remarkable from being of limestone, and sheltering the entrance from NE. winds. The inhabitants of these small harbors, including Pomquet, are Acadians, of French extraction, who live principally by agriculture.

Tracadie Harbor, 3½ miles eastward of Pomquet Island, has its narrow entrance about ½ mile to the eastward of Bowman Head. It is extensive, and has 14 feet water in some parts within, with many coves, islets, and small streams, the principal of which, called Tracadie River, is at the head of the eastern arm, 2½ miles in from the sea. The depth over its dangerous bar of gravel and stones is only 2 feet at low water, in a narrow and crooked channel; it therefore admits only boats or very small vessels at high water. The village of Tracadie and the church are situated about a mile within the entrance. The church is large and can be seen from a great distance out at sea.

Pomquet Road.—Pomquet Island is of red sandstone, low, wooded, about ½ mile long, and is joined by a reef to Pomquet Point, from which it is distant 350 yards. The reef dries out from the point more than half way over towards the island, and leaves a passage with only 3 or 4 feet in it at low water.

Pomquet Road is considered safe during the summer months, but where the riding must be very heavy in NE. gales is in the bay between Pomquet Point and Little River, which last admits boats only at high water, and with its church and settlement will be seen to the southward at the distance of a mile from the island.

Anchorage.—Vessels may anchor in any depth from 3 to 6 fathoms over sandy bottom, but the best sheltered berth is in 4 fathoms at low water, with the south point of the island bearing N. 7° W., distant ½ mile.

Directions.—To run for this anchorage from the northward pass the eastern shore of Pomquet Island at the distance of ½ mile, or in not less than 8 fathoms water, until Pomquet Point comes in sight to the southward of the island, when haul to the westward into the bay.

The Bowman Bank must be avoided in approaching from the eastward, either by the lead or by not bringing the north point of the island to bear to the westward of S. 43° W. until the north point of the bank is passed. The bank is of great extent, running off fully 2 miles to the northward from Quarry Point and Bowman Head, and has rocky patches on it, with 13, 16, and 19 feet at low water, at various distances, from ¾ to 1½ miles off shore.

Pomquet Banks lie off Pomquet Island to the northward, distant from 3 to 6 miles. The soundings on them are rocky and irregular, the least water, 6 fathoms, being on the outer and smaller of the two banks, with the church at the Little River shut in behind the east side of the island, bearing S. 3° E. 5½ miles.

Pomquet Harbor has its narrow entrance at the eastern extremity of a range of low sandhills and sand beach, 2½ miles from Monk Head, and in the bay between it and Pomquet Point. It is an extensive place, branching into two principal and many smaller inlets, coves, and islets. It is navigable for small craft and boats nearly 3 miles in from the sea, but it is of no use to shipping, having usually only a depth of 2 feet at low water over its shifting bar of sand. The principal settlements and the church are on the western shore of the NW. arm, and the Indians have a chapel and a reservation of land on the eastern and larger branch, at the head of which is Pomquet River, a small stream (1860).

Monk Head is a cliff of gypsum 45 feet high, 2¾ miles from the entrance of Antigonish Harbor. A rocky bank, with 3 fathoms least water, extends off it ¾ mile to the eastward, and there are no more than 4½ fathoms at double that distance from the shore.

Antigonish Harbor, at 11 miles to the southward of Cape St. George, is nearly 200 yards wide at the entrance, between low points of sand, from which a dangerous bar extends to the distance of ½ mile. The bar and the deep water up the harbor are marked by spar buoys on either side. The bar has a depth of 6 feet at low water, but both the depth and direction of the very narrow channel are said to change occasionally. The anchorage off the bar (rock) is not good, and would be quite unsafe in a gale from the NE.

The Harbor is of great extent, running in 6 or 7 miles to the SW.; the channel, between flats of mud and weeds, having in some places 5 or 6 fathoms water. There are flourishing farms on either side, and the village of Antigonish, containing about 1,500 inhabitants, stands at the head of the western arm, distant 6¼ miles from the entrance. Gypsum abounds here, forming, with lumber and the produce of an in-

creasing agriculture, the cargoes of the schooners which frequent the harbor.

The United States is represented by an agent.

Tides.—Northerly winds cause high tides, and southerly winds the contrary. The rate of the tides in the entrance seldom exceeds 2 knots, unless it may be in spring after the melting of the winter's snow.

MacIsaac Rock, with 9 feet least water, is the center of a small detached shoal, distant nearly 600 yards from the shore, between MacIsaac Point and a remarkable patch of white gypsum cliff. This rock, which is the only danger on the west side of St. George Bay, bears from the gypsum patch N. 49° E. $\frac{2}{3}$ mile; it is distant $2\frac{1}{4}$ miles to the northward of the entrance of Antigonish, and is shown occasionally by heavy breakers.

Cape St. George, the NW. point of this bay, is a bold and precipitous headland, composed principally of slate, conglomerate, and trap rocks, attaining the elevation of 600 feet above the sea. The shallow water does not extend off it beyond $\frac{1}{4}$ mile, but as there is a depth of 20 fathoms at double that distance, the lead affords but little warning, and it should therefore be approached with caution in thick weather. A new church has been built to the westward of the lighthouse, forming a useful land mark. Off Ballantyne Cove, on the eastern side of the cape, there is an anchorage in westerly winds, but the ground is not very good.

CHAPTER VII.

NORTHUMBERLAND STRAIT, CAPE ST. GEORGE TO MIRAMICHI BAY.

The Coast from Cape St. George to Merigomish Harbor is bold and free from danger. The land, rising from the sea to the summit of a ridge 2 or 3 miles in rear of and parallel to the coast line, is well settled, the cultivation extending occasionally to the summit of the ridge, which attains the extreme elevation of 1,100 feet above the sea.

Malignant Cove has a small stream at its head, affording good landing for boats, and will be known by the Sugar Loaf Hill, a mile in rear of it, and 680 feet high above the sea.

There is no harbor in this distance, the wooden pier at the village of Arisaig affording shelter only to boats and shallops in easterly winds, but none in winds from between north and west.

The remarkable rock called the Bara lies nearly a mile to the eastward of this pier, and ½ mile NE. from Arisaig church.

Merigomish Harbor is so intricate and difficult of entrance that no directions would enable a stranger to take his ship in safely, and the northerly winds send in so heavy a sea over the bar that to get on shore going in would probably be attended with the loss of the vessel. The outer entrance of the harbor (¾ mile wide) is between King Head and Merigomish Point, the latter being the west extreme of Merigomish Island. The bar is formed by rocky shoals running out from these points of entrance ¾ mile to the northward. The channel over the bar, and leading in from it between the shoals, is more than 200 yards wide; but the shoals are so steep that the lead affords little guidance, and there are no leading marks. The course running in is at first to the southward, and then by a sharp turn to the eastward close past Savage Point (the sandy spit at the SW. extreme of Merigomish Island) into the harbor. This inner entrance of the harbor, between Savage Point and the east end of Olding Island, is about ¼ mile wide, but the navigable breadth is reduced to 100 yards by the shoal off Olding Island, and the tides frequently run there at the rate of 5 miles an hour.

This harbor is seldom visited by anything larger than a coasting schooner. The pilots are therefore incompetent from want of practice, and the channel is no longer buoyed as it used to be formerly. The harbor is of great extent, running in 5 or 6 miles to the eastward, within Merigomish Island and the sandbar which joins it to the mainland,

and also 4 miles to the westward, up a bay full of islands, coves, and precipitous headlands. Several small streams enter the harbor, of which French River, opposite the east end of Olding Island, is the principal. It is approached by a very narrow channel, through flats of mud and weeds, and can be ascended by boats to the bridge, about a mile within its entrance.

Merigomish Island, 3¼ miles long and 1⅓ miles broad, is of clay and sandstone, belonging to the coal formation, rising to the height of 150 feet above the sea. Thin seams of coal may be seen at Coal Point, where the cliffs, which form the northern shore of the island, are 35 feet high. Its southern shore is broken into coves, cliffy islets, and peninsulated points similarly to the western part of the harbor. A sandbar 2½ miles long unites the island to the mainland to the eastward, excepting in unusually high tides, when the water washes over one part of it into the harbor.

Tides.—It is high water, full and change, at Betty Point, in Merigomish Harbor at 10h. 6m.; springs rise 5¼ feet, neaps 3¼ feet, but the diurnal inequality is strongly marked here, as well as at Pictou, causing a considerable difference in the times and the heights of the two tides on the same day.

Little Harbor.—In the shoal bay between Evans and Colquhoun Points, which are distant 5 and 6½ miles, respectively, from the lighthouse in Pictou Harbor, are two narrow, dangerous, and intricate channels, leading through shoals into Little Harbor. Of these channels the eastern and best turns sharp in to the eastward within Roy Island, and close round the sandy spit at its SW. extreme. The other has only a foot or two water, and leads into the western part of the harbor, which is several miles in extent, and broken into bays, coves, and picturesque points, but only fit for boats, being nearly all dry at low water, excepting the narrow channels.

Roy Ledge, a small, rocky shoal, with 9 feet least water, lies off the north shore of Roy Island, at the distance of 700 yards, and ¾ mile N. 73° W. from Colquhoun Point. There is also a reef of sandstone, in great part dry at low water, running out from Colquhoun Point ½ mile to the eastward; and as all these dangers have 5 fathoms water close to them, vessels should be careful not to stand into less than 6 fathoms along this part of the coast.

The Roaring Bull, distant 4 miles to the eastward of the lighthouse in Pictou Harbor, is the cliffy north point (with a remarkable red patch on it) of a small peninsula, united to the mainland at its western end by a sandy beach, and having at the other extremity the gully or entrance to Chance Harbor, dry, or nearly so, at low water. A reef of sandstone runs out to the NE. from the Roaring Bull, 600 yards to the 3-fathom line of soundings.

Pictou Harbor, in every respect the finest on the southern shore of the gulf, derives additional importance from the coal mines, valuable

quarries of building stone, and finely settled country in its neighborhood. It is situated at the bottom of a bay, which is 1¾ miles wide at its entrance, from Logan Point to Mackenzie Head, and 1½ miles deep. Mackenzie Head will be recognized by its sharp-pointed cliff of clay and sandstone 40 feet high, with a small white house on the edge, and by its bearing S. 24° W. from Logan Point.

Pictou stands on the north shore of the harbor, 2 miles within the lighthouse, on the declivity of a ridge, which rises to the height of 200 feet above the sea, at a short distance in rear of the town. A spur from this ridge forms Battery Point, which shelters the place from the east winds. On Town Point has been built the custom-house, a new brick building faced with stone, and having a square tower at its south extreme. The most conspicuous of the new public buildings is the Roman Catholic Church, a red brick edifice with a spire, situated near the summit of the eminence to the eastward of the town; the convent, a large, square brick house, stands near this church. The academy is a square building of brick, surmounted by a small pinnacle, and situated on the summit of the hill over the town. The shore margin of the town has been improved by the erection of new wharves. The population is estimated at 32,000. From Pictou Landing a steam ferry-boat plies at alternate hours to and from Pictou.

Telegraph.—Pictou is in telegraphic communication with all parts of Canada and the United States. It is connected with Halifax, St. John, and Quebec by the Intercolonial Railway, also with Port Hawkesbury in the Gut of Canso. Passenger steam vessels run to all parts of the gulf.

The shores of the West Arm are well settled all the way to the head of the tide, 5 miles from Pictou, and the post road to Truro and Halifax passes along the northern shore. Several of the hills to the westward of this arm are of considerable height. Rogers Hill, 5 miles from Pictou, is 546 feet, and Dalhousie Mountain, 3 miles farther SW., the highest point of which is 950 feet above the sea at high water. West River, above the tide water, is a considerable stream, although shallow and rapid. It winds its way through a beautiful and well-cultivated valley, containing a large population.

The Middle Arm runs in 5½ miles from Pictou to the SW., at which distance the tide ends, and the river is rapid and fordable at low water.

The East Arm is navigable by vessels to the distance of 2½ miles from Pictou, to the coal loading place, or railway terminus from the Albion Mines. Its channel, which joins the harbor directly opposite Picton, is of the average breadth of 180 yards, and marked out by spruce-bush stakes driven into the mud flats at intervals on either side. Half a mile below the loading place a bar of hard ground with 12 feet at low water, crosses the channel; and therefore vessels must not be laden to draw more than 15 feet in neap and 18 feet in spring tides. At a short distance above the loading place the channel is so divided

and obstructed by old oyster beds, that it is difficult to carry the depth of 3 or 4 feet through at low water; and similar obstructions occur several times up to the bridge at New Glasgow, 6½ miles from Pictou.

New Glasgow is a large town on the east side of the river, owing its existence to the coal mines which are about 2 miles higher up and to which boats can ascend with the tide. New vessels of considerable burden are built at the town and are taken down the river when light with the assistance of the tide.

Supplies.—Sufficient water may be obtained here to supply the largest ships, from a steam water tank. The best watering place is on the south shore of Pictou Harbor, ¾ mile within its mouth; and there is another opposite the coal loading place, in the East River.

Charges.—Health dues, 2 cents per ton; harbor dues, 1½ cents per ton. Tugboat charges, inward, from 3 to 5 cents per ton; outward, 5 to 10 cents per ton. Ballast 50 cents per ton. Coal $2 per ton. Pilotage: Vessels if spoken by a pilot shall pay half pilotage if services are not required. Rates are as follows:

	Inward.	Outward.
Vessels of 80 and under 140 tons	$6.00	$4.00
Vessels of 140 and under 200 tons	10.00	6.00
Vessels of 200 and under 300 tons	12.00	8.00
Vessels of 300 and under 400 tons	14.00	9.00
Vessels of 400 and under 500 tons	15.00	10.00
Vessels of 500 and under 600 tons	16.00	11.00
Vessels of 600 and under 700 tons	17.00	12.00

Vessels of 1,000 tons and upward, 2 cents per ton, inward.
Vessels of 1,000 tons and upward, 1½ cents per ton, outward.

Coal.—From 1,000 to 2,000 tons can be obtained immediately. Heavy draft vessels, unable to cross the bar can be coaled outside by lighters.

Pilots.—The branch pilots of Pictou are, for the most part, able and experienced men, and are always on the lookout for vessels.

The **United States** is represented by a consul and vice consul.

Mackenzie Shoal is a rocky bank nearly ⅓ mile in diameter, with 16 feet least water, and with 12 or 20 feet between it and the shallow water to the westward. Vessels of large draft should not attempt to pass within or to the southward and westward of it. Caribou and Doctor Points in one, bearing N. 41° W. will lead 200 yards to the eastward of the shoal; and the tower of the custom-house in line with the north extreme of the lighthouse embankment bearing S. 68° W. will lead to the northward. The shallow water extends a long ½ mile to the northward from Mackenzie Head, and its edge in 3 fathoms, trends thence to the westward toward the lighthouse, the whole bay on that side being shoal, with ridges of sand drying out to a considerable distance from the shore at low water. In the bay between Mackenzie Head and the light-house, and on the west side of Powell Point, is Boat

Harbor, the entrance of an extensive inlet or lake, full of mud and weeds, and which boats can traverse only when the tide is in. On the opposite or northern side reefs extend off Logan Point to the east and SE., a long ½ mile to the 3-fathom line of soundings.

Cole Point, which is of clay and sandstone cliff 30 feet high, and lies a short mile farther in or to the SW. from Logan Point, has also a reef stretching out to the eastward ½ mile, and the shallow water continues from it westward to the commencement of London Beach on the north side of the entrance of the harbor.

Pictou Bar and Road.—The distance across the harbor's mouth from the lighthouse on the sandy spit to London Beach is about 400 yards, and the greatest depth is 7 fathoms water; but the channel over the bar is much narrower, and has besides a turn in it, which, together with the necessity of knowing exactly the set of the tides, renders a pilot indispensable in a large ship. After passing the bar the depth will increase to 5, 6, and 7 fathoms, sand.

Directions.—To enter Pictou Harbor by day, having a fair wind, and being further out than Mackenzie Shoal, the position of which has been pointed out, bring the tower of the custom-house in line with the north extreme of the lighthouse embankment, bearing S. 69° W. This will lead north of Mackenzie Shoal and south of the bank off the marine hospital as far as the bar, until the first two trees south of Roaring Bull Point are in line with the base of the cliff at Mackenzie Head, bearing S. 79° E. These marks in line will lead over the bar in a depth of 19 feet, the deepest water at low-water spring tides. When the north extreme of Moodie Point (the first point on the south side within the lighthouse) opens out to the northward of the Sandy Spit, haul to the westward, at first towards the SW. extreme of London Beach, and afterwards so as to pass midway between it and the Sandy Spit into the harbor.

By night.—Vessels entering the harbor should follow the usual course, by keeping the Pictou Bar light in line (S. 69° W.) with the light on the custom-house, until reaching the alignment of the Fraser's Farm range (north side of entrance), which should then be held on a N. 82° W. course until Pictou Bar light is brought nearly abeam, whence a course S. 62° W. will lead to safe anchorage in the harbor.

A pilot would be indispensable in a vessel of large draft with beating winds, and even smaller vessels must know the tides and the place well to beat in or out with safety.

Tides.—With a good tide it is possible to carry 25 feet over the bar, and 23 feet may generally be reckoned upon; the harbor, therefore, is capable of admitting vessels of large draft, but it must be remembered that the best of the two tides is always spoken of in the 24 hours, for the diurnal inequality, in the rise of the tides, which occurs more or less in all parts of Northumberland Strait, is very strongly marked in this harbor. It may also be added that in the month of August, when the

observations were made, the a. m. tides were always the highest, following the inferior transit of the moon with north declination in the first part of the lunation, and the superior transit with south declination in the latter part.

Pictou Island is of clay and sandstone, rising in the central parts to the extreme height of 150 feet above the sea. It is wooded on the northern side, but there are settlements and farms along its southern shore. Low cliffs form its outline with the exception of several small bays, and Roger Point, on the south side, which is of sand and affords the best landing for boats.

West Point may be passed in 3 fathoms water within ½ mile; but on either side of the west end of the island there are rocks, nearly dry at low water, just within the 3-fathoms line and extending to the distance of 600 yards off shore. The shallow water runs out occasionally to the same distance off the north shore of the island, which should not be approached nearer than the depth of 8 or 9 fathoms in the night time. The southern shore may be approached to 5 fathoms; but at East Point a dangerous reef, in great part dry at low water, runs out ½ mile to 3 fathoms, and nearly a mile to the 5 fathoms line. There are 9 fathoms not far off this reef, both to the northward and eastward; it should therefore be approached with caution at all times, but especially at night and with a flood tide. There is a lifeboat on the east end of the island.

Pictou Island Bank extends from Pictou Island to the west and south 3¼ miles, and is of irregular outline, and of sandstone thinly covered with sand, gravel, mud, and broken shells.

The **Middle Shoals** are a chain of rocky patches, with 11 feet least water stretching across the northern part of the bank, 1¼ miles, in a southwesterly direction; so as to approach within ½ mile of the Caribou Channel on the one hand, and within 1¼ miles of the west point of Pictou Island on the other. There is but little doubt that at least 3¼ fathoms at low water can be carried through between these shoals and Pictou Island, although the irregular soundings forbid absolute certainty. Roger Point and West Point (Pictou Island), bearing east will lead to the northward of them in 4 fathoms, but large ships had better not approach them on that side nearer than 7 fathoms.

Caribou Harbor, between Caribou and Doctor Islands and the main land, is an extensive place, being 6 miles long from the southern entrance to the West Gully, and in some parts a mile wide. The whole of this large space is occupied by shallow water, excepting the narrow channel of the harbor, which is deep enough for vessels of far larger draft than can pass the bar, but does not run through, being lost in mud flats at the distance of 3½ miles from the southern entrance. The West Gully is dry at low water; about a mile within it Caribou River enters the harbor, and is navigable for boats to the distance of 2 or 3 miles. There are settlements and farms along the southern shore of the

harbor, also upon the inner side of the islands, and a road from the former to Pictou.

The ship entrance to this harbor between Doctor Spit and Widow Point is only 120 yards wide, and the navigable breadth is reduced by the shallow water off Widow Point to 80 yards. The depth is here 5 fathoms, but an abrupt turn and a tide of 4 knots render so narrow a channel extremely difficult. Outside the entrance the channel between the shoals becomes wider, and the depth diminishes gradually out to the bar at the distance of a mile, and over which only 9 feet can be carried at low water. The great superiority of the neighboring harbor of Pictou renders it in the highest degree unlikely that ever this harbor will be much frequented by shipping; and its bar and entrance are too difficult and dangerous to be attempted without some special object, and then a pilot should be employed. Widow Point, the south or mainland point of entrance of the harbor, is of sand and shingle; and Oak-Tree Point, a steep clay bank, with a house and barn upon it, is the first point of the mainland within the entrance, from which it is distant ½ mile.

Directions.—To enter Caribou Harbor,—having a fair wind, and being in not less than 5 fathoms water,—bring the high-water extremes of Widow and Oak-Tree Points in one, bearing west, and run towards them, till the vessel has passed the bar in the low-water depth of 9 feet, and has deepened to 13 or 14 feet. Then look out when Caribou and Doctor Points come in one, bearing N. 37° W., when sheer immediately to the northward, sufficiently to bring Oak-Tree Point and Doctor Spit in one, bearing S. 86° W. Keep the last-named marks accurately in one, or closely touching, until the vessel is not more than 60 yards from the end of the spit, when sheer to the SW. so as to pass its south extreme at the same distance into the harbor. The channel, for the first ½ mile in from the entrance, is not more than 180 yards wide, the tide is stronger there, and the bottom not quite so good as farther in, where the channel expands to 260 yards in width, with a depth of from 4 to 7 fathoms over mud bottom.

Tides.—The diurnal inequality causes at times a difference of nearly 2 hours in the two tides of the same day, and also several feet in the height of the water. The rise of the highest of the two ordinary spring tides of the same day is 6 feet, and of neap tides 4 feet.

Caribou Channel.—The safest mode of running through this channel to the westward is to strike soundings in 6 or 7 fathoms on the edge of the shoal water off Doctor Island, and follow it to the NW. until Mackenzie Head is just shut in behind Logan Point, bearing S. 18° E. Then steer from those marks, keeping the head just shut in, and they will lead across the deep water, and afterwards along the western edge of the Pictou Island bank out to sea. If the wind were strong from the SW. with an ebb tide, it would be preferable to keep on the weather side of the channel, in which case the edge of the

shoal water off Doctor Island should be followed farther to the NW. until Logan Point is only a little open to the eastward of Doctor Point. Those points in one lead along the east side of Caribou Reef, and in 4 fathoms water. Keep Logan Point a little open, and it will lead clear out to sea in not less than 4½ fathoms.

The same marks and directions, taken in reverse order, will enable a vessel to take this channel from the northward or westward, it being only necessary to add that she should not haul to the eastward until the Hawksbill is well shut in behind Caribou Point, nor open out the former again after having shut it in, until the lighthouse at Pictou is open to the southward of Cole Point; the lighthouse and Cole Point in line, bearing S. 44° W., being the mark for clearing the south extreme of the Pictou Island bank in 5 fathoms.

Caribou Reef, of large stones, which dry out to the distance of 600 yards from the shore, is very dangerous, the deep water approaching nearly close to its north point and eastern side. It stretches out from Caribou Point to the northward ½ mile to the 3-fathoms and ⅔ mile to the 5-fathoms line of soundings. Doctor Island lies to the southward of Caribou Point, forming two entrances into Caribou Harbor, of which the northern, between two sandy spits, is 800 yards wide, but has only 4 feet in it at low water.

Doctor Reef, also very dangerous, extends from Doctor Point to the eastward 1¼ miles, to the depth of 3 fathoms, and shows rocks dry at low water to the distance of ½ mile. To the southward of this reef, and ⅔ mile SE. from Doctor Point, lie the Seal Rocks, dry at low tide.

The Coast from West Gully of Caribou to Cape John, is nearly straight, unbroken, and free from danger, the shoal water nowhere extending beyond ⅓ mile off shore. Cliffs of clay and sandstone, not exceeding the height of 50 feet, and in general much lower, form the predominating feature; but there is, nevertheless, good landing for boats almost everywhere in fine weather. From the Caribou Point to West Gully, the coast is formed by the northern shore of Caribou Island, appearing from a distance like several islands; but on a nearer approach the wooded parts are found to be joined together by sand bars.

Amet Sound is very extensive, affording excellent anchorage for any number and class of vessels. Mullegash Point and Cape John, its western and eastern points of entrance, are more than 4 miles apart, but there are detached dangers outside, or off the entrance, which require to be described before directions can be given for entering by either of the three channels which they form.

Amet Isle is very small, and is divided into two parts, of which the western is the largest, presenting clay cliffs on every side, excepting where they are joined together by a sandy neck. It is flat at top, bare of trees, covered with a coarse grass, and about 20 feet above the sea at high water.

This islet was formerly much larger than at present, and the cliffs

still continue to be undermined by every heavy gale and high tide; the frosts also aid in the work of destruction, so that the time can not be very distant when there will only remain a reef of the highly inclined sandstone which at present forms the base of the islet, and dries out to the distance of about 400 yards, excepting on the southern side, where boats can generally land at all times of tide (1860). Shallow water extends off the islet 600 yards to the westward, and will be cleared in not less than 3¼ fathoms, if the English church steeple at the river John be not shut in behind the western side of Cape John; but vessels of large draft should stand in only to 6 fathoms, remembering that in every other direction shallow water extends from the island to far greater distances.

The Amet Shoals are rocky with very irregular soundings. They extend nearly 4 miles from the islet to the eastward, and also to the SE. 2 miles towards Cape John. In both directions there are rocky patches, with no more than 5 or 6 feet water, a long mile out from the islet; at a greater distance than 2 miles there are not less than 16 feet, but there is a patch with that depth fully 3 miles to the eastward of the islet. To clear the extreme east end of the shoal in a greater depth than 4 fathoms, Cape John must bear to the westward of S. 34° W. The northern side of these shoals is very steep, and should not be approached in a large ship, especially at night, to a less depth than 10 fathoms. Treen Bluff and Saddle Island touching, and bearing S. 84° W., lead along the southern side in 2¾ fathoms, but if kept distinctly open will clear it in 3¼ fathoms.

Waugh Shoal, which from its position and steepness is extremely dangerous, is a rocky bank, nearly 1¼ miles long and ½ mile broad, with irregular soundings from 2 to 5 fathoms. It should not be approached from the northward nearer than the depth of 7 fathoms, but in all other parts vessels may approach to 5 fathoms at low water. The NE. side is just cleared in 5 and 6 fathoms, by the western side of Cape John and the English church steeple at the river John in line, bearing S. 48° E. The SE. side is cleared in 4 fathoms, by the eastern extremes of Mullegash and Chamber Points in one, bearing S. 16° W. All these objects will easily be made out excepting Chamber Point, which, being very low, is at times difficult to distinguish from the high land behind it.

The Eastern Passage into the sound, between the Amet Shoals and Cape John, is ¾ mile wide, from 3 fathoms to 3 fathoms water on either side, with irregular soundings from 3½ to 6 fathoms, and with rock, red sand, broken shells, and mud bottom.

It is difficult to carry more than 4 fathoms through at low water. To safely take this passage from the eastward with a fair wind, bring Cape John to bear to the westward of S. 34° W., or bring that cape and Brulé Point to touch, bearing S. 40° W., and steer for them till Treen Bluff opens to the southward of Saddle Island, when alter course

to S. 62° W., which is for the mouth of Tatamagouche Bay, and the vessel will sail nearly through the middle of the passage. There will be no danger from the Amet Shoals if Treen Bluff be kept open to the southward of Saddle Island; nor yet from the shallow water off Cape John, if it be not approached nearer than the depth of 4 fathoms, or at the utmost 3½ fathoms.

The Middle Passage into Amet Sound between the Waugh Shoal and Amet Islet is a long mile wide, and carries 6 to 10 fathoms water, with sand and mud bottom. An excellent leading mark for running through this passage with a fair wind is Conn's house and Brulé Point in line, bearing S. 9° E.

The Western Passage, between Saddle Island and reef and the Waugh Shoal, is a mile wide, with irregular soundings from 5 to 8½ fathoms, the lesser depth being to the southward of Waugh Shoal, where the bottom is rocky and uneven, whilst farther westward it is of mud.

If bound to Brulé Harbor, after rounding Saddle Reef, steer for Brulé Point, or a little to the east of it, until the mark for clearing the NE. side of the Brulé Shoals, namely, the English church steeple in the John River, a little open to the northward of Long Point comes on; then alter course, and run towards those marks till Brulé Point bears S. 34° W., when haul in to the southward, and run by the lead along the SE. side of the Brulé Shoals in from 3¼ to 3½ fathoms, until the anchorage is reached. A pilot, or a previous buoying of the channel, would be necessary to take the vessel into the harbor.

If bound to the anchorage off the bar of the river John, it is only necessary to run up the middle of John Bay till the water shoals to 3½ fathoms, which is as near as a large ship should go, although distant 1½ miles from the river's mouth.

Tides.—The tidal streams are very weak within the sound, setting regularly up the bays and rivers. In the Western Passage both tides in general set fairly through, the flood about west, and the ebb about east, at rates never exceeding 1½ knots, and usually much less. In the Middle Passage the ebb sets out to the northward and eastward less than a knot, and the flood to the westward at the same rate over Waugh Shoal. In the Eastern Passage the ebb sets out to the NE., and the flood in the opposite direction, the rates varying from a half to 1½ knots.

John Bay runs in nearly 4 miles to the SE. from Cape John to Murphy Point, which is the sandy east point of entrance of the river. The bay is free from detached dangers, but the shoals extending out from its shores are often very steep, and should not be approached nearer than the low-water depth of 3½ fathoms, nor without due caution. Sandy shoals occupy the head of the bay, drying out nearly ½ mile, and extending 1¼ miles from the entrance of the river to the 3-fathoms line.

Cape John, the northern point of John Bay, will be easily recognized by its sharp pointed cliffs of sandstone 40 or 50 feet high; and

by two high rocks, always above water, on the inner part of the reef, which extends from it 800 yards to the NW. This reef is very steep, especially at its western point, where there are nearly 7 fathoms at low water quite close to it, being a greater depth than occurs anywhere else near. Off the northern side of the cape shallow water extends nearly ½ mile, and as there are only 15 or 16 feet close within the 3-fathoms mark, large vessels should not approach nearer than the low-water depth of 4 or 3½ fathoms.

The river John has only one foot at low water over its bar of sand, and an irregular depth, from 3 to 11 feet, in a very narrow channel up to the bridge, a distance of nearly a mile. Several new ships are built here annually, and notwithstanding the shallow bar, are taken out light and moored outside to take in cargoes of lumber which are brought down the river. The vessels lie off the entrance in from 2½ to 3½ fathoms, over mud bottom; and although the bay is completely open to the NW., are considered safe in the summer months.

There are extensive and flourishing settlements on either side of this river. The English church will be known by its spire, about ¼ mile to the eastward of the bridge; and the chapel by its cupola, on the opposite or western bank, ⅛ mile from the bridge towards the river's mouth.

Brulé Peninsula.—Brulé Peninsula is wooded, rather low, and united to the mainland at its SW. end by a low and marshy isthmus. Peninsula Point, its NW. extreme, has a reef extending from it 800 yards to the NW., in great part dry at low water, and so bold that there is little warning by the lead. Brulé Point is 1½ miles farther to the eastward, the intermediate northern shore of the peninsula being nearly straight, and of clay cliffs 8 or 10 feet high, the whole appearing to a vessel in the offing like a low island in the center of Amet Sound.

The Brulé Shoals, extending 1½ miles to the north from Brulé Point, are rocky with irregular soundings, and there is only 9 feet water not far from their outer edge. The north and NW. sides of these shoals should be approached very cautiously, for they are there extremely steep, having 4 or 5 fathoms close to the edge, and no good clearing mark. The English church steeple at the river John just open to the northward of Long Point, bearing S. 70° E., leads along their NE. side in 3 fathoms; their east and SE. sides may safely be approached by the lead to 3½ fathoms.

Brulé Harbor runs in within Brulé Peninsula, 2¼ miles, in a SW. direction, and is nearly a mile wide, but the far greater part of this large space is occupied by flats of mud and weeds. There are 14 feet on the bar at low water, and 19 feet for a short distance within, but the channel soon becomes very narrow and divided into several branches.

Anchorage.—The anchorage outside the bar, in 3¼ fathoms, mud bottom, is the best sheltered of any in the sound, and a ship or two usually lie there to take in lumber every year. In the best berth Brulé

Point will bear N. 66° W. with the eastern end of Saddle Island showing open one point to the right of it, and Cape John N. 22° E.

Barachois Harbor, between Chamber and Peninsula Points, is the entrance to a small harbor called the Barachois, which runs in, within Chamber Point, SW. 1½ miles, and is then contracted to a very narrow channel turning to the SE. into a shallow lake one mile long, with steep banks and an island at its head. This place, which is seldom visited by shipping, has 12 feet over its bar, and 14 feet within at low water.

Tatamagouche Bay, 2¼ miles wide at entrance, between Mullegash Point and Brulé Peninsula, runs in 7 miles to the westward, affording everywhere good anchorage over a bottom of soft mud, but with insufficient depth of water for large ships far up the bay. A stranger may safely approach to the low-water depth of 3 fathoms in the outer part of the bay, and to 2½ fathoms farther in, but in entering should keep well over to the northward to avoid the Brulé Shoals.

Anchorage.—In 4 fathoms, good holding ground (mud), with Cape John N. 65° E., Mullegash Point N. 47° W.

Tatamagouche River, in the SW. corner of Tatamagouche Bay, and 5 miles from its entrance, is approached by a very narrow channel through the flats, obstructed by oyster beds, and only one foot deep at low water, in ordinary spring tides; nevertheless new ships of considerable burden are brought down it occasionally. The principal settlement in the bay, containing Mr. Campbell's shipbuilding establishment, and a chapel, stands on the western bank, and there is a bridge 2 miles from the entrance of the river.

Several vessels visit this river for lumber every year; they anchor off it where there are only 11 or 12 feet at low water, and are suffered to ground on the soft mud, as the tide falls, without injury.

Tatamagouche and Mullegash are now large villages.

Mullegash Point, the north point of Tatamagouche Bay, is one mile to the southward of Saddle Island; shallow water extends from the one to the other, and off the point to the distance of a long ½ mile.

Saddle Island is low, wooded, and joined to the shore by shoals at low water.

Saddle Reef runs out from the east point of the island one mile to the depth of 3 fathoms, and is very dangerous, having on it a round-backed rock called the Wash-ball, dry at low water, and distant ¼ mile from the island. There are only a few feet of water much farther out. In approaching this reef from the northward, the soundings give little warning, but an excellent leading mark, namely, Treen Bluff, just open to the northward of Saddle Island, and bearing S. 70° W., just clears it in 4 fathoms. The lead affords the only guide for clearing it to the eastward, where it may be safely approached to the depth of 6 fathoms with care.

Wallace Harbor is the finest on this coast, excepting Pictou, having 16 feet over its bar at low water in ordinary spring tides, which rise 8 feet, so that it is capable of admitting vessels of large draft. Its entrance, 2½ miles SW. of Oak Island, and between two sandy spits, named Palmer and Caulfield Points, is nearly 400 yards wide and carries 6½ fathoms water; but the approach to this entrance, over the bar and through the bay for a distance of 3 miles, is by a crooked channel, which, although nowhere less than 300 yards wide, is difficult without the aid of buoys or sufficient leading marks. The services of the pilots of the place will, therefore, always be necessary to insure safety.

Wallace stands on the southern shore, 1½ miles within the entrance of the harbor. The land rises gradually in the rear to the summit of a ridge extending to the eastward, and attaining the elevation of 400 feet. Opposite Wallace the river is more than ½ mile broad, whilst the channel between the flats is only 60 or 70 yards wide, and with 5 or 6 fathoms water. At the distance of 2 miles higher up the river is divided into two branches, both of which are rendered narrow and intricate by oyster beds in the channel.

Wallace, under the name of Ramsheg, was formerly visited annually by many more vessels than at present, the supply of lumber being then much greater; at present only a few cargoes are embarked and two or three vessels built there every year. There are no fisheries of consequence in a commercial point of view; the salmon and gaspereux, or alewives, still visit the river, but in diminished numbers, and a few codfish are caught off Oak Island and the neighboring coast in the months of May and June. There is the same difficulty in obtaining a large supply of fresh water at Wallace as at Pugwash; it is obtained from wells and springs, which boats can only approach at high water.

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Ship Channel.—Oak Island Bar is of sand, and extends from Oak Island nearly 2¼ miles to the southward towards Gravois Point, which may be recognized by its being the highest part of the clay and sandstone cliffs, and by its bearing and distance from the east end of Oak Island, namely, S. 28° E. 3 miles. Within or to the westward of the bar the whole bay is shallow, excepting the Ship or Wallace Channel leading to Wallace Harbor. The outer or eastern side of this bar may be safely approached by the lead to the depth of 4 fathoms.

The Ship Channel is fully 600 yards wide at its entrance, between the south point of the bar and the shoal which stretches out 800 yards from Gravois Point, and 3½ fathoms in it at low water. From the entrance the channel runs to the northward and westward, curving round Horton Shoal, and between it and the shallow water to the northward, which is continuous from the bar to Mullin Point.

The Horton Spit, of low sand, inclosing a marsh, extending to the northward from Horton Point, will easily be recognized by a vessel entering the Ship Channel. The northern end of this spit is quite bold,

the channel passing close to it, and thence westward ¾ of a mile, to the entrance of the harbor.

Directions.—Approaching from the northward pass Oak Island at a distance of fully ¾ mile, or in 5 fathoms water, to avoid the reef off its east point. Approaching from the eastward, Treen Bluff (the cliffy point 2½ miles to the eastward of Gravois Point) must be passed at an equal distance or depth to avoid the Treen Reef, which is sandstone, and stretches out ½ mile from the bluff to the 3-fathom line of soundings; the north extremes of Saddle Island and Cape John in one, bearing S. 87° E., lead to the northward of it in 4 fathoms. In either case, approach the shore about ½ mile to the eastward of Gravois Point, taking care not to bring the east end of Oak Island to bear less to the westward than N. 34° W., until the south side of Saddle Island is only one degree open to the northward of Treen Bluff, bearing N. 82° E.

Steer now S. 82° W., taking all possible care to keep the island as nearly as possible one degree open,* but remembering that the lead must be principally depended upon to guide the vessel along the edge of the shallow water off the mainland, in 3¼ or 3 fathoms at low water, or a corresponding depth at other times of tide, until Smith Point (the eastern extreme of the mainland outside or to the northward of Oak Island), appears through the middle of the opening in the trees of Oak Island, and over the low and narrow neck which joins the southwestern part to the rest of the island, and bearing N. 31° W. Then alter course to N. 56° W., and a run of ½ mile will place the vessel within, or to the westward of the south point of the bar, in about 16 feet at low water.

Let the course be now immediately changed to N. 22° W. for another ½ mile, and when Palmer Point opens out to the northward of the Horton Spit, bearing west, steer N. 70° W., and the water will soon deepen to 4 and 5 fathoms with mud bottom, affording tolerably safe anchorage under shelter of the bar, on which the sea breaks in heavy weather. But, if it be wished to proceed to the harbor, let the NW. course be continued for ½ mile, and Caulfield Point will open out to the northward of the Horton Spit; and, immediately afterwards, Smith Point will open out to the westward of the west extreme of the trees on Oak Island, when the vessel must be kept gradually away to the westward, and towards Palmer Point, so as to run along the northern edge of Horton Shoal, which can generally be seen until off the Horton Spit at the distance of 200 yards, whence the course is S. 79° W. for ¾ mile to the harbor's mouth.

In entering the harbor keep two-thirds of the way over towards the northern, or Palmer Point, which is quite bold, to avoid the shoal water extending 100 yards from Caulfield Point.

* This mark is given as only better than none, for it is not easy to keep the island so nearly one degree open as is required. If the island and bluff be brought to touch, the vessel will be ashore on Gravois Reef, and if they be opened to the extent of 2 degrees only, she will be on the south point of the bar.

Anchorage.—Anchor about 500 yards within the entrance, where the channel is 300 yards wide, and carries from 3 to 6 fathoms, with mud bottom. On either side, flats of stiff red clay, dry at low water, extend to the shore, and render the landing difficult when the tide is out. At the distance of 1,200 yards within the entrance a middle ground commences, and diminishes the breadth of the channel to 100 yards. Nearly abreast the eastern end of this middle ground there is a narrow channel through the flats and up Lazy Bay, which runs in more than a mile to the SE., and has, on the southern shore near its head, cliffs of gypsum 30 feet high.

Tides.—The rate of the tidal streams is greatest in the entrance of the harbor, and there it does not exceed 1½ knots during the summer months; whilst outside, in the Ship Channel, it is usually from 1¼ to one knot. The ebb, however, may be somewhat stronger in spring after the melting of the winter's snows.

Fox Harbor runs in 3 or 4 miles to the NW., with a channel through flats of tenacious red clay and weeds, which are nearly dry at low water. There are 3 or 4 fathoms water in this channel, but a depth of 8 or 9 feet is all that can be carried over the bar at low water in ordinary spring tides.

Oak Island is low, for the most part wooded, and about a mile long, having Jerry Island, small and wooded, a long ½ mile to the westward of it, and on the north side of Fox Bay, just within Mackenzie Point.

The Coast from Mackenzie Point to Pugwash Point is unbroken, and for the most part composed of clay and sandstone cliffs, of the height of 50 feet, from which the land rises to the summit of a ridge 150 feet high. Mackenzie Point is separated from Oak Island by sandbars and a gully for boats nearly dry when the tide is out.

Pugwash Road. in the entrance of Pugwash Bay, affords excellent anchorage, in from 16 to 19 feet at low water, with sand and clay bottom, being sheltered by Phillip Bar and Lewis Reef from westerly, and by Pugwash Reef from easterly winds. This anchorage is exposed between N. NW. and N. NE., but the shallow water outside prevents any sea from coming in sufficient to endanger a vessel during the summer months.

Directions.—To run for Pugwash Road from the northward, the vessel being in not less than 5 fathoms water, bring the English church-steeple at Pugwash so as to be seen over and only just within the west extreme of the low cliff of Fishing Point (the east point of the bay) bearing S. 35° E.

Run towards those marks, taking care not to open out the church in the least to the westward of the point until Bergeman Point (the south point of entrance of the river Phillip) bears S. 34° W., or until the depth decreases to 3½ fathoms at low water. The vessel will then be close off the NW. end of the Pugwash Reef, and must steer south for ¾ mile, when she will be in from 16 to 19 feet at low water, with clay bottom,

Anchorage.—Directly in the line joining Bergeman and Pugwash Points, and with Fishing Point N. 85° E., distant nearly ½ mile. This is the best anchorage; but vessels may lie ½ mile farther in to the southward, or close off the bar, in 14 feet at low water. Still farther in the bay is all shoal, excepting the narrow channel, which curves round its eastern side and leads to the harbor.

To run for Pugwash Road from the eastward, the vessel being in more than the low-water depth of 5 fathoms, bring Bergeman Point to bear S. 34° W., and steer for it until the church opens out to the westward of Fishing Point, when immediately alter course to south and, having run nearly ¾ mile, anchor in the same berth as before directed.

Pugwash Harbor, at the head of the bay and entrance of the river of the same name, is small but quite secure, and has more than sufficient depth of water for any vessel that can pass the bar, on which the depth is 14 feet at low water, in ordinary spring tides. The bar is about ½ mile within the entrance of the bay, and a crooked channel, from 100 to 200 yards wide, and through flats of sand and weeds, for the distance of one mile, leads from it to the harbor's mouth. No directions would avail for this channel, and the assistance of one of the able pilots of the place is indispensable, and will be readily obtained in answer to the usual signal.

The town of Pugwash, with its wharves and small wooden English church, stands on the east side of the entrance of the harbor. Immediately within there is a fine little land-locked basin, with a depth of nearly 7 fathoms, in which vessels lie moored in security, to take in cargoes of lumber that are brought down the river.

Pugwash River, immediately within the harbor, expands into a small lake, 1½ miles long and one mile wide. On the western side the narrow channel of Lime Creek leads to quarries of limestone, unfit for building, but which supply Prince Edward Island as well as the neighboring country with lime. The river continues navigable for small vessels about 2 miles above the lake, and for boats to a distance of 7 miles from its entrance.

Water.—There is no good watering place at Pugwash, the supply from wells, or from springs which are frequently dry in summer, being too limited for the wants of a ship of war.

Tides.—The rate of the tidal streams, which is greatest in the entrance of the harbor, does not exceed 2 knots, unless it may be the ebb in the spring after the melting of the winter's snows; in Pugwash Road it seldom exceeds a knot.

Phillip River enters the sea immediately to the southward of Lewis Head, and between the latter and Bergeman Point. Its mouth is ¾ mile wide, but a dangerous bar of sand and stones stretches across it, so as to leave only a narrow and tortuous channel of 8 feet at low water, through which the new vessels, built up the river and brought down light, are taken with difficulty on their way to Pugwash, where they

take in their cargoes, and where also the lumber and produce brought down this river are taken to be shipped. Within the bar a depth of 12 feet at low water can be carried up the river to the distance of 5 miles, and there are in some places 4 and 5 fathoms; the channel, between flats of mud and weeds, being, in some parts, not more than 40 or 50 yards wide. Boats can easily ascend about 9 miles, at which distance the tide ends, and there is a slight rapid.

Pugwash Reef extends ¾ mile to the westward from Pugwash Point, and dries out about half that distance. There are rocky patches, with 11 and 12 feet water, ¾ mile off the point to the northward; and others farther to the eastward, a full mile out from the shore; moreover, there is uneven rocky ground, with a less depth than 4 fathoms, 2 miles off shore, and which renders it unsafe for a stranger in a vessel of large draft to go within the depth of 5 fathoms.

Lewis Reef extends NE. 2½ miles from Lewis Head; its outer part is composed of detached rocky patches, on which there are from 14 to 18 feet water, with a greater depth between them; but the inner part is shallow.

Bay Verte is 9 miles wide across its entance, from Indian Point in New Brunswick to Cold Spring Head in Nova Scotia, but contracts to the breadth of 2½ miles near its head. It is 11 miles deep, and separates the two provinces which have just been named, their boundary continuing across the isthmus from the head of Bay Verte to Cumberland Basin, a distance of about 11 miles. This isthmus connecting Nova Scotia with the rest of North America is low and affords an advantageous level for the construction of a ship railroad being built from Amherst to Tignish.

There are thriving settlements on either side of Bay Verte, and especially at its head, where extensive tracts of meadow land have been formed by diking out the tide.

The **River Tignish** is the most considerable stream in Bay Verte, which it enters on the south side, near its head. It has only 3 feet depth of water, in a very narrow channel, when the tide is out; and it is approached by a narrow channel, carrying 3 to 7 feet, through flats of mud and weeds, which dry out a mile from its mouth. The spring tides rise 9 feet, and the neap tides 5 feet.

Spear Shoal, having a patch of rock with 10 feet least water near its east end, and from 15 to 18 feet in other parts, is a bank of sand and stones, resting on sandstone, about a mile long, in an east and west direction, and ¼ mile broad. From the shoalest part Cape Spear bears N. 56° W. 1¾ miles, and Indian Point N. 2° W. 2¼ miles. The lead gives little warning in approaching this dangerous shoal from the eastward, on which side there are from 3¾ to 4¼ fathoms close-to; but vessels will avoid it by coming into no less water than 4½ fathoms, as they pass to the southward of it.

Heart Shoal, lying about a mile westward of the Spear Shoal, and S. 14° W. 1¼ miles from Cape Spear, has 9 feet least water and 15 feet between it and the shore; but it lies within the 3-fathoms line of soundings.

Laurent Shoal, of rock and sand, with 16 feet least water, is about ¾ mile long by half that breadth. From the shoalest part Cape St. Laurent bears N. 57° W. 2¾ miles, Ephraim Island N. 70° W., Indian Point N. 40° E., and Cold Spring Head S. 5° W.. This shoal is also bold on the east side, where there are 4½ fathoms close-to.

Aggermore Rock, with 18 feet least water, and bearing N. 28° E. 2¾ miles from Cold Spring head, is, like the Laurent Shoal, merely one of the shallowest points of an extensive rocky bank, which is thinly covered with mud and sand, and which extends out from Cape St. Laurent and Ephraim Island, in a SE. direction, so as to leave a deep channel about 2 miles wide, between it and Cold Spring Head. At low water not more than 19 feet could be safely reckoned upon, in running between the Aggermore Rock and the Laurent Shoal, or between the latter and the Ephraim Banks extending off the northern shore.

Directions.—Vessels bound up the Bay Verte should keep the Nova Scotia coast aboard, running up in 6¾ and 7 fathoms water till they arrive off Cold Spring Head, where at the distance of about 1½ miles from the shore they will find the water deepen to 8 or 9, and even nearly to 10 fathoms, as they pass to the southward of the banks and shoals which have been described. After passing Cold Spring Head about 3 miles the depth of water decreases to less than 5 fathoms, and continues to shoal gradually, with mud and sand bottom, to the head of the bay. The Boss Spit, which extends ¾ mile from the south shore between Boss and Jackson Points, and 3¼ miles to the NW. from Cold Spring Head, is dangerous, as it dries out to its edge, and is so steep-to that there are 17 feet water close to its outer point. Vessels should be careful not to go into less water than 3¼ fathoms until they are past this sand spit. Farther up the bay there is nothing in the way, excepting two patches of stone with 3 and 5 feet water at the distance of ½ and ¾ mile northward of Tignish Head.

Tormentine Reefs are also extremely dangerous, and are rendered doubly so by the strong tides. They extend off Indian Point rather more than 3 miles to the eastward, and there is rocky ground with 4 fathoms fully a mile farther off shore. The part of these reefs which dries at low water is very small, and bears N. 85° E. 2¾ miles from Indian Point. It lies about 300 yards to the southward of the line joining Cape Spear and the south side of Ephraim Island, and the whole of that island open to the southward of Cape St. Laurent will lead more than a mile to the southward of it. The only sufficient guides, therefore, are the lead and the chart.

Caution.—Vessels running through Northumberland Strait at night or at any time without a commanding breeze should not approach this

reef from any direction between north and east nearer than 9 fathoms water, for the flood tide sets over it to the southward, in the Bay Verte, at the rate of 3 knots, causing a great rippling over the part that dries, and generally indicating its position. Nearly midway between the dry part of the reef and Indian Point there is a patch of rocks with 7 feet at low water. Small craft carry a depth of 2½ fathoms at low tide through between that and Indian Point, and often take shelter under the latter in northerly winds; but large vessels wishing to do the same must run around outside the whole of the reef, and will find the soundings in the chart a sufficient guide.

Directions.—To run through the 2½ fathom channel between Indian Point and dry part of the Tormentine Reefs bring Indian Point and Cape Spear in one, bearing SW., and run towards them until the east extreme of Cape Tormentine touches the west side of the outer Jourimain Island, bearing NW.; then alter course and run to the SE., with the last-named marks on astern, until the water deepens to 5 fathoms at low tide, when the vessel will be to the southward of the reefs.

Cape Tormentine is a name sometimes applied to the whole and sometimes to different points of the great headland which forms the eastern extremity of New Brunswick within the gulf, and which separates Bay Verte from the rest of Northumberland Strait. But it is here restricted to the comparatively high central point, to which the inhabitants also seem to confine it; and again, in conformity with their usage, as well as for precision of description, the names of Indian Point and Cape Jourimain have been adopted for the southern and northern extremities of this promontory.

Jourimain Shoals are extremely dangerous to vessels running at night without their leads going; they commence at Peacock Cove, off which there is a patch of 3½ fathoms at 2 miles off shore. They extend from Cape Jourimain 1½ miles to the NW., and there is a patch of 4 fathoms 1¾ miles north from the same point. They are of sandstone, thinly covered with sand, and their SE. point, a narrow ridge with only 6 feet at low water and distant 1¾ miles from the shore, is the most dangerous, because the boldest part of the shoals. It should not be approached nearer than the depth of 9 fathoms in the night time, but farther westward the shoals may be neared with proper caution to 6 fathoms at low water.

Anchorage.—To the southward of the Jourimain Shoals, and between them and the Tormentine Reefs, there is good anchorage, with westerly winds, in from 5 to 6 fathoms, the bottom being of sand, with clay underneath.

Little and Great Shemogue Rivers are only fit for boats and very small vessels, having narrow and intricate channels over shifting bars of sand.

Anchorage.—There is good anchorage, in 5 or 6 fathoms sandy bottom, off these rivers, in the bay between Cape Bald and Cape Bruin.

Cape Pillet Church, situated 1½ miles southwestward of Cape Bald, and bearing S. 58° E., distant 11¾ miles from Cassiés Point Light-house, has a square tower, and is a conspicuous mark from seaward.

Kouchibouguet and Abouchagan Rivers, in the sandy bay between Cape Bald and Bouleaux Point, and 6¼ miles eastward of Shediac, are small, and can only be entered by boats at high water.

Off Bouleaux Point a reef extends more than a mile from the shore; but Cape Bald, which is of sandstone cliff, 40 feet high and 11 miles eastward of Shediac Island, is bold, and may safely be approached by the lead to the depth of 5 fathoms.

Shediac Bay.—Shediac Point is a low sandstone cliff, nearly 4 miles to the southward of Cocagne. The Grandigue Bank, with from 14 to 18 feet water, extends off it to the distance of 2 miles, having the least water near its outer edge. This extensive rocky bank is dangerous to vessels of large draft, which, however, will pass outside it if they do not approach the shore nearer than the depth of 5 fathoms at low water.

Anchorage.—There is good anchorage under Cassiés Point, in north and northwest winds, in 17 or 18 feet, mud bottom.

Medea Rock.—The Medea Rock is very small, with 6 feet least water. There are 3 and 4 fathoms water around it at the distance of 200 yards, excepting to the southward, in which direction there are several rocky patches, with 12 feet water, between it and the shore, which is distant from it nearly 1¾ miles.

The can buoy on Medea Rock is colored *red* and *black* in horizontal bands, and may be left on either hand in entering.

The Zephyr Rock is also very small, with 9 feet least water, and lies rather more than a mile west of the Medea Rock.

The can buoy on Zephyr Rock is colored *red* and *black* in horizontal bands, and may be left on either hand in entering.

The *marks* used for clearing Medea and Zephyr Rocks are the leading lights and beacons on Shediac Island and on the railway wharf, Point du Chêne, which lead in 13 feet least water to the railway wharf. Grandigue Church, in line with north extreme of Shediac Island, bearing N. 54° W., leads westward of Zephyr and Medea Rocks.

Shediac Harbor is the easiest of access and egress on this part of the coast, being the only one which a vessel in distress can safely run for, as a harbor of refuge. It is superior to Buctouche and Cocagne, in the depth of water over the bar, and it is also much more extensive within than the latter; the space in which shipping may be moored, in from 12 to 17 feet at low water, being ¾ mile long, and ¼ mile wide.

The harbor is unsafe with the northeasterly gales of autumn, instances having occurred when all vessels, whether at anchor or moored to the wharf, were driven on shore; but, except on these rare occasions, it is a safe harbor.

The wharf at Point du Chêne has been enlarged by the addition of another pier, making with the old pier a safe dock, and from the latter

a wharf has been extended eastward, alongside which vessels must discharge their ballast.

Shediac Village (locally known as *The Cape*), is situated on the southwestern shore of Shediac Bay. The village contains four churches, the most conspicuous from seaward being the Episcopal and Roman Catholic, which are surmounted by spires and stand at the eastern end of the village. The Methodist has also a spire and is situated in the middle, while the Presbyterian, a white building with a square tower, is built near the western end of the village. Westward of Scoudouc River is a Baptist church, a yellow building with a small tower, but like the Cape church, it is not visible from seaward. The population in 1883 was 6,200.

Point du Chêne is a terminus of the Intercolonial Railway, and the entrepôt of trade to Prince Edward Island, with which there is steam communication daily, except on Sunday, while navigation is open. A small village has been built at Point du Chêne with a conspicuous hotel, which is surmounted by a tower and flagstaff.

On Shediac Island there are two conspicuous trees, situated ⅛ mile eastward of the beacon leading lights; these trees show in misty weather when the beacons are not visible.

The beacons on Shediac Island are difficult to distinguish from any great distance, and those on the railway wharf, from which the inner leading lights are shown, are often hidden by the masts of vessels lying there.

Directions.—Vessels approaching Shediac harbor should, for the first time, take a pilot; if one can not be obtained the following directions will lead in by day or night, but no other route than the one indicated should be attempted.

The light on Cassiés Point having been sighted, the center of the bay should be steered for, and the lights or beacons on Shediac Island brought in line, bearing S. 84° W., taking care to keep Cassiés Point light bearing westward of N. 32° W., until that leading mark is on.

Keep the Shediac Island lights or beacons in line, until near the northern red buoy, when the vessel's course should be altered to the southward in time to bring the leading lights or beacons on the railway wharf in line, bearing S. 17° W. just before reaching the red buoy. This mark will lead up to the wharf, but if an anchorage is sought by day bring the cliff of Cape Brûlé in line with the end of the grass off Point du Chêne, bearing S. 78° E., then steer westward and let go the anchor; by night proceed for rather more than ½ mile with the railway wharf leading lights in line S. 17° W., and then anchor slightly eastward of that line.

A place, locally known as the Deep Hole, with 19 to 20 feet water, is situated ¼ mile southwestward of the western red buoy, on the mark of the wharf lights in line; vessels anchor there to complete their cargoes, or to wait until the tide is high enough to enable them to

leave. The water shoals rapidly, eastward of Deep Hole, to 10 and 11 feet on Chêne Bank.

Water is very scarce at Shediac; it may be bought from a contractor. At high water it may be obtained with difficulty from Scoudouc River, but it is not very good.

Supplies of all kinds may be obtained at Point du Chêne.

Coal.—About 60 tons of coal are usually stored at Point du Chêne by the railway department, but any quantity can be procured from Pictou in about one day.

Charges.—Pilotage $1.50 per foot(compulsory); harbor master's fee $4; health visit $5; tonnage dues 2 cents per ton.

Trade.—The exports consist of lumber, salmon, potatoes, and oats.

Repairs.—There are no means of repairing vessels at Shediac.

Telegraph and Railways.—Point du Chêne is in telegraphic communication with all parts of Canada and the United States. It is connected with Halifax, St. John, and Quebec by the Intercolonial Railway; and, during the season of navigation, with Prince Edward Island by a daily steam vessel.

Tides.—The tides in Shediac Bay are extremely complicated. The establishment, at the only full and change period observed, was 0h. 0m. The highest tides occur at full and new moon, and rise 4 feet above the lowest water. At other times the rise of tide is about 3 feet. The low water occurs at intervals, varying from one to 18 hours after high water, and ranging from 3 inches to 4 feet, without any apparent law. The streams generally are weak.

The country about Shediac is fertile and well settled, consisting of undulating ridges of clayey loam, attaining the extreme height of 150 feet, and resting on the sandstone of the coal formation. There is a good road across from Shediac to the village of Monckton, at the bend of the Petit Coudiac River, the distance being 14 miles. Meanwhile a railroad has now been completed across to Monckton, and is intended to be continued until it connects with other New Brunswick lines, leading to St. John, etc.

Cocagne Harbor has its entrance to the southward of Cocagne Island, and between it and Renouard Point, the latter being formed of reddish sandstone cliffs 50 feet high. It is a very small harbor, and the channel over the bar of sand, gravel, and sandstone is narrow and crooked, with 10 feet at low or 14 feet at high water in ordinary spring tides. Within the bar there are from 2½ to 4 fathoms, in a very narrow channel, for a distance of about ¾ mile. Farther in the bay is shallow, with oyster beds and mud flats, covered with from 4 to 6 feet water. To enter this harbor, fine weather and a good pilot are absolutely necessary.

Cocagne River enters the head of the bay ½ mile to the southward of the church. It is crossed by a bridge just within its entrance, and is navigable by boats for several miles. The shores of the river and bay

are well settled by families of Acadian and British extraction, engaged in agriculture, together with lumbering and shipbuilding to a limited extent.

Buctouche Road, off the entrance of the Buctouche River, and in the widest part of the channel within the Outer Bar, is quite safe for a vessel with good anchors and cables, the ground being a stiff tenacious clay, and the Outer Bar preventing any very heavy sea from coming into the anchorage. It is here that vessels of too great draft of water to enter the river lie moored to take in cargoes of lumber. In approaching this anchorage there is nothing in the way of vessels that do not draw too much water to pass the Outer Bar, excepting the North Patch; but larger vessels will find more water (not less than 3½ fathoms) by approaching from the northward, according to the following directions.

Directions.—Bring Buctouche steeple to bear to the southward of S. 67° W., and run in shore with it on that bearing, in order to pass to the northward of the North Patch. In running in, if the weather be favorable, Cocagne steeple will be observed to open out to the westward of Cocagne Island, so as to be seen between the latter and the mainland; the course must be continued till the steeple comes in line with the extreme of Dixon Point, which is a small, low, and rocky peninsula of the mainland, 2½ miles to the southward of Buctouche Sand Bar. Alter course immediately, running with Cocagne steeple and Dixon Point in line, bearing S. 5° W., and they will lead close inside the Outer Bar and clear of a small shoal, which lies between it and the shore, and on which there are not less than 2¾ fathoms. Take care not to shut the steeple in behind Dixon Point, as the vessel runs along the sand bar, and immediately after Buctouche steeple opens out to the westward of the small sandy islet which forms the SW. point of Buctouche Sand Bar two white beacons on the mainland come in line N. 84° W., the vessel will be in the best berth for anchoring.

Anchorage.—Anchor with the white beacons in line, bearing N. 84° W., and Cocagne steeple open about its own breadth to the eastward of Dixon Point, in 3¾ or 4 fathoms at low water, and with excellent holding ground.

Buctouche River enters the sea to the SE., through the shallow bay within the Buctouche Sandbar. The two white beacons just mentioned, as pointing out the best anchorage in the roadstead, are intended to lead in over the bar of sand and flat sandstone, in the greatest depth, namely, 8 feet at low and 12 feet at high water in ordinary spring tides. But the channel is so narrow, intricate, and incumbered with oyster beds that written directions are as useless as the assistance of a pilot is absolutely necessary to take a vessel safely into the river. Within the bar is a wide part of the channel in which vessels may ride safely in 2½ and 3 fathoms over mud bottom; but off Giddis Point the channel becomes as difficult, narrow, and shallow as at the bar. It is in its course through the bay that the Buctouche is so shallow and intricate;

higher up its channel is free from obstruction, and in some places has 5 fathoms water. Having crossed the bar, a vessel may ascend about 10 miles farther, and boats 13 or 14 miles, to where the tide water ends.

The country on either side of the Buctouche is considerably higher than at Richibucto, the ridges attaining an elevation of about 200 feet above the sea. The banks of the river are well settled, principally by Acadians, and the clayey soil is very fertile. There are saw and grist mills at the head of the tide.

North Patch of rocks, with 12 feet least water, is small, with 5 fathoms close outside of it. It lies 2 miles off shore on the NE. point of the Outer Bar of the Buctouche, with Cocagne steeple and the NW. extreme of Cocagne Island in line, bearing S. 8° W.; the south end of Buctouche Sandbar S. 33° W.; and Buctouche steeple seen over the sandbar N. 82° W. Vessels will pass outside of it, if they do not come into less than 5 fathoms at low water.

Outer Bar of Buctouche River is a long ridge of sandy and rocky ground, carrying 2¼ to 3¾ fathoms water, and extending from the North Patch nearly to Cocagne, a distance of 7 miles.

Richibucto Head.—Off Richibucto Point, which is the SE. extreme of the south beach, and 3½ miles from the mouth of the Richibucto, a reef of sandstone extends off shore to the distance of a mile from the high-water mark, and continues 2 or 3 miles farther to the southward, to Richibucto Head, which is of sandstone and clay cliffs, 50 feet high.

From Richibucto Point, the SE. extremity of the Buctouche sandbar is distant 14½ miles. There is nothing requiring notice in the bay between them, excepting the small Chockpish River, affording shelter to boats at high water.

Richibucto River is inferior only to the Miramichi, either in the distance to which it is navigable or in the depth of water over its bar. It is annually visited by a considerable number of vessels for cargoes of lumber. There are flourishing and rapidly increasing settlements on its banks, as well as on those of its principal tributaries, the Aldouin, the St. Nicholas, and the Molus or Molies Rivers. The population, of English, Scotch, Irish, and Acadian extraction, are engaged in agriculture, lumbering, and shipbuilding; but they do not prosecute the fisheries. Traces of coal are reported to have been found in the sandstone, which forms the substratum of this and of all the neighboring country.

The Aldouin enters on the northern side; about 2 miles within the entrance of the river, and about a mile higher up on the same side, stands the town of Richibucto (Liverpool), containing about 1,000 inhabitants.

The **United States** is represented by an agent.

The entrance of the Richibucto is about 700 yards wide; it lies between two sand-bars, several miles in length, called the north and south beaches, on which there are sand-hills as high as 30 feet. Immediately

within the entrance there is a wide expanse of mud and weeds, nearly dry at low water, excepting the channel of the river. On the northern side, a shallow bay leads, within the north beach, to the lagoons, whilst on the south side, within the south beach, lies French Island; and still farther to the SE. French Creek and Low Village, where there is a church, visible in some directions from the sea. Within the wide part just mentioned, the breadth of the Richibucto is rendered irregular by numerous bays on either side. Just below the town it is above 800 yards wide, but contracts to 300 yards at Jardine's establishment, after which it expands again for a considerable distance, and is nowhere less than 160 yards broad, nearly to the end of the navigation; although the channel between mudbanks, nearly dry when the tide is out, is much narrower. Low cliffs of sandy clay are frequent on either side of the river; but the adjacent country, although undulating, is everywhere of very small elevation, not exceeding 80, or at the utmost 100 feet above the sea.

The bar of the Richibucto is extremely dangerous, especially to large, deeply laden, and dull sailing vessels outward bound in the fall of the year. Taking advantage of the highest spring tide, and sailing at high water, if the wind becomes unsteady or too light, they are almost certain to be thrown ashore by the ebb tide, on the southeastern part of the bar; and should a NE. gale occur, to be destroyed before they can be got off again. To take a ship in with a leading wind and flowing tide, is attended with no other difficulty than that which arises from the narrowness of the channel; but in all cases the assistance of a pilot is absolutely necessary, since the bar is subject to occasional changes from the effect of heavy gales. The bar extends from the north beach, for 2 miles to the eastward, parallel to the south beach; there is a rock in the eastern part of it, but the remainder is of sand, dry at low water.

Anchorage.—No part of this bar extends to seaward so much as a mile from the shore, and it may be safely approached by the lead to 6 fathoms water, at any time of tide; but for the purpose of anchorage 5 fathoms is a better depth, the bottom being there of fine brown and gray sand, affording far better holding ground than farther in-shore.

The depth of water over the bar is 11 feet at low water, or 15 feet at high water in ordinary spring tides, and is gradually becoming deeper; and there is not a continuously greater depth for the first mile in from the red buoy, the channel being from 100 to 180 yards wide, between the 2 fathom lines, excepting at the turn to the westward, which is the narrowest part, and only 80 yards broad. Farther in the channel expands in breadth to about 370 yards, increasing in depth to 3¼ fathoms. It contracts again to only 100 yards wide at the north beach, where the depth is 5 fathoms, and the stream of tide strongest, being about 2½ knots. About ½ mile within the north beach the channel widens for a short distance to 400 yards, and has 3 to 4 fathoms water in it, with mud

bottom. The depth increases farther in, and is nearly 9 fathoms in some places.

Pilots.—The branch pilots of Richibucto River are able, intelligent, and attentive to their duties. They keep a good lookout for vessels from the beach at the mouth of the river.

Directions.—Having made the lighthouse on Richibucto Head, look out for the red buoy, and keep outside of it, in not less than 5 fathoms water until it and the two lighthouses come in line, bearing about S. 51° W. Then steer in close past the buoy, keeping the two lighthouses exactly in line, and looking out for the small red buoys, which are placed along the southern edge of the bar, and must be left on the right hand going in. Having run in about ½ mile with the two lighthouses in line, the vessel will be within 400 yards of the south beach, and the small red buoys along the south, or inner side of the bar, will be seen to come in one with each other. Haul up immediately, passing about 40 yards to the southward of the buoys.

Having run to the west, between the bar and the south beach, about 1¼ miles, the channel becomes again very narrow, and is marked by small buoys on either side, red on the starboard hand, black on the port; but as these buoys might not be readily made out by a stranger, bring the SW. point of the north beach to bear N. 67° W., and steer for it, observing that the channel, which is then only 100 yards wide, passes close to the north beach. As soon as the vessel is abreast of this edge steer to SW. for ½ mile, when there will be plenty of room to anchor in quite a secure harbor. The small red buoys just mentioned are merely pieces of wood painted red, and placed at convenient distances, according to the judgment of the pilots.

Tides.—It is high water, full and change, at Richibucto River at 3h. 30m.; springs rise 4 feet. The rate of the tides in the river is from 1½ to 2 knots.

Kouchibouguacsis River becomes rapid, shallow, and consequently unnavigable, above the point reached by the tide. It has saw and grist mills and settlements of Acadian French on its banks. Of its two outlets through the sand bars, the most northern, 3 miles southward of the Kouchibouguac, is only fit for boats, the channel leading to it through the lagoon having become nearly filled up with sand and weeds.

The river, after entering the lagoon and running for some distance towards this outlet, turns to the southward, and continues its course within the sand bar for a distance of 3 miles to the southern and main outlet, which is called Big Cove, and is 6 miles south of the Kouchibouguac and 3 miles north of the Richibucto River. The depth by a narrow channel over the shifting bar of sand is 9 or 10 feet at high water in spring tides. There are 3 fathoms just within the sand bars, from one to 3 fathoms through the lagoon, and 2 or 3 fathoms for several miles up the river. There is a communication by boats at high water through the lagoons and within the sand bars, not only between

the two rivers just described, but also southward to Richibucto and northward nearly to Marsh River.

Kouchibouguac River, after flowing for more than a mile through an extensive lagoon, nearly dry at low water in spring tides, enters the sea by an outlet through sand bars about 9 miles SW. from Sapin Point. Its bar of sand not unfrequently shifts in heavy easterly gales, and the channel is at all times narrow and intricate. Large ships, which are occasionally built in this river, are taken out light, and towed by a steamer to be fitted at Richibucto or Miramichi. The banks of this river are well settled, and there is a sawmill at the head of the tide.

Kouchibouguac Bay is nearly 20 miles wide from Richibucto Head to Sapin Point. Its shores are exceedingly low, with sand bars and beaches inclosing extensive and shallow lagoons, through which the river flows to the sea. The shoal water (depths not exceeding 3 fathoms) extends offshore to a considerable distance in the northwestern part of this bay; and there is foul ground, with as little as 3 fathoms water, more than 2 miles out to the eastward from the mouth of the Kouchibouguac River. Northeast gales send a heavy swell into the bay, so that it will be prudent not to get embayed there, especially at night or in a dull-sailing vessel.

The Sapin Ledge, of sandstone, and with 12 feet least water, is very dangerous, lying directly in the way of vessels running along shore. It should not be approached nearer than the depth of 9 fathoms in the night time, and at all times it should be remembered, that the 5-fathoms line of soundings is distant from it only about 400 yards. The ledge is 1¼ miles long, east and west, and about ½ a mile wide, from the depth of 3 fathoms to 3 fathoms; and its eastern or outer extremity bears S. 24° W. 6 miles from the lighthouse on Escuminac Point, and N. 83° E. 2½ miles from Sapin Point. There is a depth of 3½ fathoms between it and the last-named point.

CHAPTER VIII.

PRINCE EDWARD ISLAND AND NORTHUMBERLAND STRAIT.

Prince Edward Island is rendered extremely irregular by large bays, inlets, and rivers, which penetrate the island so that no part of it is distant more than 7 or 8 miles from navigable water. Its shape is an irregular crescent, concave towards the gulf, the northern shore forming a great bay, 91 miles wide and 22 miles deep, out of which the set of the tides and the heavy sea render it very difficult to extricate a ship when caught in the northeast gales, which frequently occur towards the fall of the year, occasionally blowing with great strength, and at such times proving fatal to many vessels.

In the interior of the island, the most elevated ridges do not exceed 400 or at the utmost 500 feet above the sea, and the land is in general much lower, especially near the coast; the prevailing feature being undulating, and the alternation of hill and dale and inlet forming very pleasing scenery. The climate is less severe than in Lower Canada; not quite so cold in winter, nor so hot in summer, being tempered by the sea breezes; but on the other hand, the advance of spring is checked by northerly winds from the gulf, driving down ice which sometimes fills the strait as late as the middle of May, so that instead of the sudden outbreak of vegetable life which is observed in Canada, it is here frequently retarded till the month of June is well advanced, and there is seldom any settled warm weather much before July.

Fogs.—But the most important advantage of the climate to the seaman is the rare occurrence of the dense fogs which so frequently embarrass him in other parts of the gulf, and which in Northumberland Strait are seldom seen. It is worthy of remark that the prevailing SW. wind of summer, which in the bay of Fundy is generally accompanied by thick fog, parts with its moisture in passing over the heated land of Nova Scotia, and becomes a hot dry wind off its northern coast. It becomes tempered in its passage over the water of the strait, heated and dried again in some degree in passing over the island, but acquires again its moist and foggy character long before it reaches the coast of Labrador, and not unfrequently before it arrives at the Magdalen Islands.

Prince Edward Island is part of the Dominion of Canada, but has a provincial government for administering local affairs. The seat of the local government is in Charlottetown.

In 1881 the estimated population was 110,000. The export trade of the island consists chiefly of agricultural produce, small quantities of lumber being also sent away. The fisheries are prosecuted on the north shore, but there is not much capital employed in the business. A railway extends from Tignish, at the north end, to Georgetown and Souris, at the east end, passing through Alberton, Summerside, and Charlottetown.

South Coast.—The shore to the westward of Cape Bear (the east point of the South Coast of Prince Edward Island) to White Sands is formed of sandstone cliffs, which are in some places 40 feet high, without beach or landing, except at Guernsey Cove, and from which the shallow water does not extend beyond 700 yards except near Cape Bear.

Blackrock and Guernsey, points distant ½ and 2 miles, respectively, to the westward of Cape Bear, have each large rocks above water close off their cliffs; and so also has Cape Bear; but the rock off the cape is much higher than the others, its summit being about 12 feet above the sea at high water, whilst Blackrock is only 7 feet, and the other still lower.

White Sands is a settlement, receiving its name from the sandy beach of a small bay, 9 miles eastward from the Wood Islands. There is a sandspit there, just covered at low water, which affords some shelter to boats, and a sandy shoal extending to the distance of ½ mile off shore. From White Sands to Little Sands, 6 miles to the westward, the sandstone cliffs are 40 to 50 feet high and quite bold.

Wood Islands are now only in part covered with timber. They are two small islets, and with their connecting sand bars are 1,400 yards in length, parallel to the shore, from which they are distant about ½ mile. The eastern or larger islet is 700 yards long and about 50 feet high. They both present cliffs of sandstone to seaward, and are united to the shore by a long sandbar at their western extremity. The space between the islets and the shore forms a secure boat harbor, having an entrance from the eastward, but it is all nearly dry at low water.

The Anchorage to the eastward of the islands, within the distance of a mile, and at any depth from 3 to 9 fathoms, is good in NW. winds, the Indian Rocks breaking the sea.

Indian Rocks, nearly always marked by rippling on the part that dries, occupy a space 1¾ miles in length, parallel to the shore, between Bell Point and the Wood Islands, and ¼ mile in breadth. They are of sandstone, dry to a considerable extent at low water, and their southern edge is 1⅝ miles off shore. The SE. point of the Wood Islands, not brought to bear to the eastward of N. 45° E., will lead to the southward of their SE. extreme, which bears S. 34° W. nearly a mile from the west end of the Wood Island, and Macdougal and Pinette Points in one, bearing N. 41° W., will lead at the distance of ¾ mile to

the westward of the western extreme, which bears from Bell Point S. 34° E. 1¾ miles; but Pinette Point can not always be distinguished

Buoy.—A whistling buoy, painted red, is moored westward of the Indian Rocks, with Bell Point bearing N. 6° W., and Wood Island light-house N. 72° E.

Tides.—The tidal streams are strong in the deep water just outside the Indian Rocks, frequently running at the rate of 3 knots per hour. It is high water, full and change, at 9¾ hours nearly; springs rise 6 feet, neaps 4 feet.

Bell Point, a mile SE. of Stewart Point, and the extreme from Prim Point, is a cliff of sandstone 40 feet in height. The shallow water is continuous from the Rifleman Reef to this point, from which it extends a mile to the 3-fathoms line, having 9 or 10 fathoms close to its edge.

Rifleman Reef, of sandstone, extends to the distance of 2 miles to the westward from Stewart Point. On the extreme outer point of this reef, in 3 fathoms, the light on Prim Point bears N. 51° W. 8 miles. Just within this point of the reef there are 8 feet water, and half way between that and the shore only 5 feet, while between those and other shallow patches there are 12 feet at low water.

Caution.—The very irregular soundings off the Rifleman Reef, and the deep water close to it (16 fathoms within less than ½ mile, while there is a much less depth farther out), render it one of the greatest dangers in Northumberland Strait. The bearing of the lights on Prim Point and Wood Islands, and the whistling buoy west of Indian Rocks, will greatly assist vessels in avoiding it, but at all times, either by night or by day, and especially in thick weather, it should be approached with care. There are no leading marks to clear its west extreme, which has 7 fathoms close-to, but the soundings give better warning there than farther to the southward. The wooded point, within and opposite the Wood Islands, in one with Black Point, the extreme to the eastward, bearing east., just clear the southern side of the reef; but the safest plan, when approaching it from the southward, will be to tack as soon as the extreme of the land to the eastward appears within the Wood Islands, bearing N. 81° E., when the vessel will be 1¼ miles from the reef.

Flat River, which is only fit for boats, is 3 miles to the SE. from Pinette Harbor. Shallow water runs off Macdougal Point, its eastern point of entrance, to the distance of a mile.

Pinette Harbor has only 2 feet at low water over its rocky and exceedingly dangerous bar. It is therefore fit only for small schooners, although it has from 3 to 4½ fathoms in its narrow channel, which runs in several miles through flats of mud and weeds, dry at low water, and then divides into several shallow branches. The bar and the Pinette Shoals are very dangerous, and should not be approached nearer than the low-water depth of 6 fathoms.

Hillsborough Bay, having in it the principal harbor and capital town, and being the outlet of an extensive inland navigation, is the most important as well as the largest of any in Prince Edward Island.

East Side of Channel.—Prim Point, the SE. point of Hillsborough Bay, is low, with cliffs of sandstone 10 to 15 feet high, and may be recognized by the light-house. Prim Island, which has also low cliffs, is distant 1¼ miles NE. from the extremity of the point, and is united to its north side by sand beaches, inclosing marshy ponds.

Prim Reef, of sandstone, runs out to the westward, both from the island and the point, so as to form a forked reef with very uneven soundings; its western point, in 3 fathoms, bears west 2 miles from the light-house. A buoy, painted red, marks the western extreme of Prim Reef; it lies with Prim Point light-house bearing about east, distant about $2\frac{1}{10}$ miles.

Governor Island, lying in the middle of Hillsborough Bay, is low, in great part wooded, and based upon sandstone.

The Governor Shoals.—Stretching out from the west end of the island, the sandstone reef is dry at low water for the first ½ mile, and has less than 3 fathoms for an equal distance farther; after which rocky and irregular soundings continue to the west extreme of the shoals, in 5 fathoms, distant 2 miles from the island. A bell buoy is moored in 4 fathoms 200 yards within the west extreme of the shoals; with the NW. extreme of Governor Island and Pownal Point touching, and bearing N. 58° E.

The Fitzroy Rock, with 20 feet least water, lies about 200 yards to the eastward of the above buoy. The Huntley Rock, bearing S. 5° E., 1¾ miles from the west end of Governor Island, has the least water, namely, 12 feet at low tide; but there are others, with from 17 to 22 feet water, as far out as 2½ miles, and the SW. extreme of the shoals in 5 fathoms is distant 3½ miles from the island.

The Squaw Shoal, with 10 feet least water, approaches close to the edge of the bank, where it is most steep, and is nearly opposite the Spithead Buoy. Battery and Trout Points in one, bearing N. 23° W., form an excellent mark for this side of the channel, leading along the edge of the bank, in 4½ fathoms least water, from near Trout Point, to ¼ mile beyond the Spithead Buoy on the opposite side.

West side of channel.—St. Peters Island, lying off the western point of entrance to Hillsborough Bay, is rather more than 3 miles in circumference, and of very moderate height, having cliffs of red clay and sandstone, 35 feet high, along its eastern shore. There are several farms on either side; but the central parts of the island are thickly wooded. It is joined to Rice Point, the western point of the bay by sands dry at low water.

Shallow water extends off this island 1¼ miles to the SW. and south; but the soundings, deepening out gradually, afford ample guidance in that part. Farther eastward the St. Peters Shoals become

much more extensive, stretching out 3½ miles N. 56° E. from the NE. point of the island. For the first 2 miles of that distance St. Peters Spit of sand dries out, affording shelter to St. Peters Road fit only for small vessels, having only from 9 to 12 feet at low water. The Spithead, a rocky shoal, with 8 feet least water, lies off the end of St. Peters Spit, and extends to within ¼ mile of the east extreme of the St. Peters Shoals, where the Spithead buoy is moored in 5 fathoms, with the west side of the government house in Charlottetown in line with Battery Point, bearing N. 17° W.; the north side of St. Peters Island, S. 59° W.; and Gallows Point just open to the northward of the dry spit of Governor Island, S. 73° E.; however, this dry spit can seldom be seen.

Caution.—The 5 fathoms edge of the bank, forming the western side of the channel into Charlottetown Harbor, trends northward 2¼ miles from the Spithead buoy to about 200 yards off Blockhouse Point, at the entrance of the harbor. The edge of the St. Peters Shoals may be safely followed by the lead in 5 fathoms as far in as the Spithead buoy; after which the bank becomes steep, and must be approached with caution in a large vessel.

The Trout Rock, with 7 feet least water, lies 400 yards within the edge of the bank, and a long ½ mile out from Blockhouse Point, which kept in line with government house, bearing N. 9° W., will just lead to the eastward of the rock in about 14 feet water.

Caution.—The buoys in this harbor are frequently out of position; therefore, in clear weather, use the leading and clearing marks.

Charlottetown Harbor is 900 yards wide at entrance, between the cliffs of Blockhouse and Trout Points; but shallow water, extending from both shores, reduces the navigable width of the channel, reckoning from the depth of 3 fathoms, to about 450 yards; and as the shoals are very steep, it would require to be well buoyed before a ship of large draft could beat in or out with safety. Cliffs of red sandstone, from 10 to 30 feet high, form the shores on either side, the land rising gradually from them in undulations, and being partly cultivated and partly wooded. The next point of cliff on the west side of entrance is Alchorn Point, and at the distance of ½ a mile from the lighthouse are the remains of Amherst fort, on the hill, 93 feet above high water. On the same side, north of Alchorn Point, is Warren Cove, and lastly, Canseau Point, with its beacon, a pole surmounted by a diamond-shaped frame 1¼ miles from the light-house. Canseau Shoal extends off Canseau Point to the distance of 700 yards. A buoy painted black marks its eastern extreme.

On the opposite or eastern side of the entrance, and less than a mile within Trout Point, is Battery Point, with its shoal; the latter running out 400 yards and having on its extreme point a buoy moored in 3 fathoms at low water. Outside that depth, on either side, the water deepens abruptly, and there are 13 fathoms in the middle of the chan-

nel. The belfry of St. Dunstan College in line with the flagstaff at government house, leads clear of the shoal off Battery Point in 10 athoms, and at the distance of 120 yards.

Middle Ground.—Within the harbor, in addition to the flats of mud and weeds extending off shore, there is the Middle Ground, with 17 feet least water. When on this 17-foot patch the west turret of the tower of the Wesleyan Chapel (built of brick and the turrets crowned with high skeleton work) is just shut in with the edge of the Roman Catholic Church tower. The white beacon on Canseau Point and McKinnon's house in line lead through midway between it, and the flat off the southern shore.

Rivers.—Of the three rivers which unite in the harbor, the Hillsborough is the largest, being navigable for vessels of the largest draft to the distance of 7 or 8 miles, and for small vessels 14 miles above Charlottetown, where there is a bridge 2 miles from the head of the river. There is a portage of less than a mile across, from the Hillsborough near its head to Savage Harbor on the north coast of the island. York River, the smallest of the three, is crossed by Poplar Island bridge, 2¾ miles from its mouth. Elliott River may be ascended 4 or 5 miles by large vessels, and 9 or 10 by small craft and boats. The shores of all three rivers are settled, and the country generally fertile.

Charlottetown is a city advantageously situated on the north bank of Hillsborough River, a short distance within the entrance, and at the point where the deepest water approaches nearest to the shore; the wharves, however, still requiring to be 240 yards long to reach the edge of the channel. The city is well laid out, with spacious squares and wide streets at right angles to each other, and contains several fine buildings.

The Provincial building occupies the center of the public square, and is flanked on either side by the law courts and post-office, both substantial brick structures. The market house, a large wooden building, with a belfry at the west end containing the fire alarm, is situated west of the post-office, while St. Paul's Church, a wooden building with a spire, occupies the east end of the square. The new Presbyterian Church, a handsome stone building, is situated at the NW. end of the town, and a convent, built of brick with a small belfry at the top, is conspicuous from the harbor. The Roman Catholic Cathedral, a wooden building with a large gilt cross at the top of the spire, and Bishop's palace, of stone, near it, also show prominently. The lunatic asylum, a fine building of stone with a high tower, stands just north of Falcon Point. The railway station is at the east end of the town, and may be known by the wharf in connection with it, on which stand large chocolate-colored warehouses. St. Dunstan College, a Roman Catholic seminary, built of brick, stands on a hill 150 feet high, 1½ miles to the northward of the town. The telegraph station is situated in Queen

street, which runs northward from Queens Wharf, and is in connection with the Anglo-American Telegraph Company.

No part of the city exceeds in elevation 50 feet above the sea at high water; but the land rises gradually behind it to the height of 150 feet at the distance of 1½ miles and is well cultivated.

Supplies.—All kinds of supplies may be obtained at Charlottetown; water in large quantities from boats fitted as tanks, in lesser quantity from wells with pumps, which are numerous in the town.

Coal.—About 600 tons are usually kept in stock, exclusive of the amount stored by the railway department, who generally have about 1,700 tons.

Telegraph and Railways.—Charlottetown is in telegraphic communication with the principal towns and ports in Prince Edward Island, also with Canada and the United States.

It is connected by rail with Georgetown and Souris, on the eastern coast of the island; with Cape Traverse and Summerside on the southwestern coast; and with Alberton and Tignish, at the northwestern point of Prince Edward Island. During the season of navigation a steam vessel runs to Pictou, 5 days each week, and sometimes there is direct steam communication with England.

Ice.—Charlottetown Harbor is usually frozen over about 21st December, and is clear of ice about 10th April, being completely closed between those dates. The first vessel arrives from sea about 26th April, and the last vessel leaves about 20th December.

Charges.—Pilotage (not compulsory), per foot, 50 cents; discharging ballast, 12 cents per ton; consul fees, 1 cent per ton; tonnage dues, 2 cents per ton; tugboat charges inwards, $5 to $10; outwards, $5 to $15; ballast, 40 cents per ton.

The **United States** is represented by a consul and vice-consul.

Tides.—Their rise is considerably influenced by the winds, so that spring tides during NE. gales have risen 11 feet, and neaps during SE. gales only 6 feet; but these are extraordinary cases. The range of the neap tides has been at times less than 3 feet. The duration of the two tides is nearly equal, and their streams continue about a quarter of an hour after high and low water by the shore, running usually at the rate of 1¾ knots off the town, and 2½ knots in the entrance of the harbor.

Directions.—Vessels entering can take the alignment (off Point Prim) of Haszard Point light-houses, bearing N. 20° E., and follow it, passing west of the bell buoy on Fitzroy Rock, until the Brighton Beach range comes on, bearing N. 23° W., when the course must be changed and the alignment kept until off Canseau Point, whence the course may be changed to the northward for the town. The intersection of the alignments is about 1,300 yards S. 60° E. of St. Peters Spit buoy. On the two alignments nowhere less than 5 fathoms should be found.

Anchorage.—The best anchorage ground will be found off the Ferry pier on the town side, and in the fall of the year it is advisable to moor NE. and SW. To the NE. of Governor Island, under shelter of the shoal at its east point, and off the mouth of the shallow Squaw Bay, there is good anchorage for small vessels, in from 9 to 12 feet with mud bottom.

Orwell Bay, leading to Orwell, Vernon, and Seal Rivers, is 2 miles wide at its entrance, between Gallows and Buchanan Points. In proceeding in from Prim Island towards Orwell, the shallow water extends to greater distances from the shore until at last it stretches nearly halfway across the mouth of Orwell Bay. Its edge in 3 fathoms is there 1¼ miles out from the cliffs, and has a rock upon it, with 9 feet least water, which bears N. 79° W. a long mile from Buchanan Point, and south 1½ miles from Gallows Point. Between the shoals just mentioned and those which stretch over to the southward from Gallows Point the channel is 800 yards wide and carries nearly 5 fathoms water, becoming shallower and narrower within the bay, until off McInnis Point (1½ miles in from the entrance and on the northern shore) it suddenly contracts to less than 200 yards in breadth and decreases in depth to 14 or 15 feet at low water in spring tides.

Just within China Point (on the northern shore, and 2 miles within the bar) is the confluence of the Orwell and Vernon Rivers, and there vessels may lie landlocked, the channel being 170 yards wide and carrying 5 fathoms water between mud flats dry at low tide.

Pownal Bay is shallow and open to westerly winds; it affords shelter to small craft and boats near its head, which dries extensively at low water.

Gallows Point, separating Pownal and Orwell Bays, has a long reef of sandstone and extensive shoals off it, on which are scattered rocks, covered with only a few feet water. The shoals extend in the direction of Governor Island to the distance of 2 miles, and also a long mile towards Prim Point. There is, moreover, a detached shoal, with 13 feet least water, bearing S. 73° W., 2 miles from Gallows Point.

Coast.—From St. Peters Island to Marle Head, a distance of 9 miles to the westward, the coast is straight and unbroken, and may be approached by the lead to 5 fathoms water; bearing in mind that that depth is occasionally within 400 yards of shallow water, extending in some places ¾ mile from the shore.

Sable Cove, between the two last-named headlands, is nearly dry at low water, and crossed by a bridge one mile from its entrance.

Marle Head has a reef running out from it nearly a mile, and which should not be approached nearer than the depth of 5 fathoms.

Inman Rock, with 4 feet least water, lies near the outer point of this reef, south ⅔ mile from Brockelby Head, and has from 13 to 19 feet of water around it. Large vessels should not approach it nearer than the low-water depth of 4½ fathoms.

Brockelby Head is the eastern point of the bay in which Brockelby River and Crapaud Road are situated. It has clay cliffs, 15 feet high, based upon sandstone, which runs out a mile to the southward, forming a dangerous reef, which must be carefully avoided by vessels approaching Crapaud from the eastward.

Crapaud Road is a small but secure anchorage off the mouth of Brockelby River, and between the eastern part of the Tryon Shoals and the land. The space in which vessels may ride in from 12 to 15 feet at low water is about ½ mile long and 400 yards wide; but the anchorage for small craft, in from 7 to 9 feet, is more extensive, continuing nearly a mile farther to the westward in a narrow channel or cove in the sands which dry at low water. The entrance to this road between the eastern point of the Tryon Shoals and the shallow water off the shore to the eastward is only 180 yards wide, and carries 9 feet at low-water spring tides.

Buoyage.—A can buoy, painted black and white, in vertical stripes, is moored with Brockleby Head bearing N. 84° E., distant one mile; also with Crapaud leading lights in line, bearing N. 19° W. A smaller buoy, similarly painted, is also moored on the mark of the leading lights in line, distant ¾ mile from the first buoy. A small cask buoy, painted black and white, in vertical stripes, lies N. 76° W., distant ½ mile from the northern of the above buoys.

Channel.—A dredged channel, with a depth of 8 feet in it, and marked by poles, extends from the western buoy to a basin, which has a depth of 8 feet, and is 300 yards in extent, situated close to the bridge.

Directions.—To enter Crapaud Road bring the leading lights in line, bearing N. 20° W., and proceed on that mark to the northern buoy; then alter course for the western buoy, N. 60° W., for ½ mile, or at night until the southern leading light bears N. 4° E., when it may be steered for and the basin entered. No sea of consequence ever comes into this anchorage, the sands outside being covered only to a depth of a few feet at high water; and the shallow water to the eastward, off Inman Point and Brockelby Head, overlapping the entrance.

Tides.—There is a depth of from 15 to 17 feet at high water in the entrance or on the bar of the road. The tidal streams are weak and irregular; in general their rates do not exceed half a knot at the anchorage, but they sometimes amount to 1½ knots for a short time along the edge of the shoals and in the entrance.

Tryon Shoals, of sand upon sandstone, dry out 1⅛ miles off shore, between the Tryon and Brockelby Rivers, and their SW. extreme, in 3 fathoms, is distant 2¼ miles from Tryon Head, the nearest part of the shore.

Mark.—There is an excellent leading mark, namely, Cape Traverse and Carleton Head in line, bearing N. 53° W., which clears the SW. point of the shoals in 5 fathoms, and at a distance of a long ½ mile.

Farther eastward these shoals may be safely approached to any convenient depth by the lead, which should never be neglected when in their vicinity, for the tides around the island meet off them, causing variations in the strength and set of the streams, which it would require long-continued observations to understand or account for. The stream of ebb out of Bay Verte frequently sets over towards these shoals, so that a vessel standing along the land with a scant southerly wind will often find herself dropping to leeward towards them much faster than her usual amount of leeway would lead her to expect.

Tryon River lies a mile to the eastward of Cumberland Cove, between Tryon Head and Birch Point, and is approached by a very narrow channel through the western side of the Tryon Shoals. There is one foot water over the bar of this channel at low water in spring tides. Small schooners enter the Tryon, with the assistance of the tide, which rises from 6 to 8 feet, and there are flourishing farms on each side of the river.

Cape Traverse, Carleton Head, Sea Cow Head.—The points between these headlands to the SE. of Bedeque are formed of red sandstone and clay cliffs, with coves between, affording shelter and landing for boats, and also anchorage for small craft with the wind off the land or in fine weather. The shallow water does not extend beyond 600 yards off either of these headlands, but in the bays its 3 fathoms edge is sometimes twice that distance from the shore, and as the line of 5 fathoms is sometimes quite close to it, the general rule for vessels at night should be not to approach nearer than the depth of 7 fathoms. In the old charts a shoal with 3 fathoms water is shown off Carleton Head, but a diligent search proved that it has no existence.

In the first 4 miles eastward from Cape Traverse there are three coves, namely, Provost, Augustin, and Cumberland Coves, which are separated by points of cliff and are dry at low water.

Bedeque Harbor, situated in the bay to the northward of Sea Cow Head, runs in to the eastward between Indian Point and Phelan Point; the former, the south point of entrance, will be easily distinguished, being faced by sandstone cliffs 25 feet high, and rising to double that height a short distance back from the shore, whilst the other is comparatively low and wooded. The Roman Catholic Church to the eastward of Phelan Point is very conspicuous and forms a good mark from the offing.

Summerside, a town of considerable size, is situated on the north side of Bedeque Harbor. Several wharves extend from the town, to one of which the railway runs. This latter may be distinguished by the light tower on a storehouse near the extreme. A large hotel has been built on Indian Island, and communication is kept with the town by a steam ferry.

Buoyage.—A black buoy is moored off the southwestern extreme of Miscouche Spit; it lies with Indian Head bearing N. 63° E., and Sea

Cow Head light-house S. 50° E., distant $3\frac{3}{10}$ miles. Indian Spit Buoy is a can buoy, painted red; Middle Ground Buoy is painted black, and Island Shoal Buoy is a can buoy, painted red.

The north side of the channel opposite Island Shoal is generally marked by a stake with a bush on the top.

Coal.—There are usually 1,000 tons in stock, exclusive of the amount stored by the railway department. Vessels of less than 20 feet draft can coal alongside the railway wharf; coal can be lightered to larger vessels in the harbor, the lighters being loaded in bulk. The railway department has usually about 1,100 tons in stock.

The **United States** is represented by an agent.

Directions.—As the assistance of a pilot is indispensable to enter Bedeque Harbor, it would be advisable to anchor in the bay or roadstead outside until one is obtained. The anchorage in the roadstead in 22 feet at low water, sand and clay bottom, is quite safe during the summer months, although open to SW. winds, the shallowness of the water and the land at the distance of several miles preventing any very heavy sea from coming in. Should, however, any extraordinary circumstances render it expedient to attempt running into the harbor, the best mode of proceeding would be to run along the SE. edge of the Miscouche Shoal, and then eastward along the northern side of the channel, by the lead, in the low water depth of 18 feet, until Indian and Graham Heads come in one, bearing S. 3° W., when the vessel should be immediately rounded to, with her head to the southward, and anchored in about 4 fathoms, mud bottom; she will then be about 800 yards within Indian Spit and in safety.

If the vessel be approaching from the eastward with an easterly wind, Sea Cow Head may be safely rounded at a distance of 500 yards. Graham Head may be passed at twice that distance, and then the edge of the shallow water off Salutation Cove may be safely followed by the lead till Indian Point is approached, where the shoal becomes very steep, as is also Indian Spit, which, however, can frequently be seen, being dry at low water.

Or steer NE. from the bay for a conspicuous gap in the land to the westward of Phelan Point; having rounded the red buoy on Indian Spit, steer to clear the black buoy off the Middle, when a course for the east end of town will lead in 5 to 7 fathoms to the red buoy on Island Shoal; thence anchor as convenient in $2\frac{1}{2}$ fathoms. The buoy on the Middle occasionally breaks adrift.

Miscouche Bank dries out to the distance of $1\frac{1}{4}$ miles from Miscouche Point, and extends $2\frac{3}{4}$ miles to the southward to the depth of 3 fathoms, sheltering the roadstead in Bedeque Bay, outside Bedeque Harbor, from westerly winds. The northern extremes of Indian Point and Indian Island in one, bearing N. 65° E., clear the south point of the spit in 14 feet water, but the lead will be a sufficient guide when a greater depth is required.

Sunbury Cove, 9 miles to the eastward of Cape Egmont, is an extensive place, but nearly dry at low water, excepting a narrow channel through the flats only fit for boats or very small craft. Miscouche Point is the eastern point of this cove; and Miscouche Church will be seen to the NE. of it, at the distance of 2 or 3 miles inland.

Fifteen Point.—The church and village at this point stand near the shore, 4¼ miles to the eastward of Cape Egmont, and can be seen at great distances, either from the eastward or westward. The Roman Catholic church may be distinguished by the body of the building and spire being white, the roof light brown; a small white nave with a black top is also attached. A tall, white beacon stands a little to the eastward. At the extremity of the point, one mile to the eastward of the church, there is a low rock above water, called the Little Dutchman, and shallow water to the distance of a long mile off shore.

Egmont Bank, of fine red sand, and with 4 fathoms least water, is very narrow, and 2½ miles long. Its northern end bears S. 88° W. 5 miles from Cape Egmont, its southern end S. 59° W. 4 miles from the same headland, and there are as much as 8½ fathoms and a clear channel between it and the cape.

From Sea Cow Head to Cape Egmont there is a bank of comparatively shoal soundings, curving to the southward, so as to extend to the distance of 3½ miles off shore; its southern edge, in 5 fathoms, forms an excellent guide for vessels at all times; but if of large draft they should be careful of venturing within that depth, since there are only 3¼ fathoms, with rocky bottom, in one part.

Cape Egmont is a remarkable headland with cliffs of sandstone 50 feet high. About a mile to the northward of it will be seen the Dutchman, an isolated rock 30 feet high, and lying close to the shore. The cape itself is quite bold to the southward; but to the westward there is shallow rocky ground ½ mile off shore, which should not be approached nearer than the depth of 6 fathoms.

Egmont Bay is 8 miles deep, and affords excellent anchorage with offshore winds in from 4 to 7 fathoms, over sand and clay bottoms; but vessels should not anchor in less than 5 fathoms anywhere excepting on the NW. side of the bay, because there is rocky ground, with only 3½ fathoms water, off the river at its head, lying just within the 5-fathoms line, and at a distance of 3 miles from the shore, whilst along the eastern shore 5 fathoms would be too near the edge of the shoals.

The church of St. Jacques is conspicuously situated 5 miles to the northward of Cape Egmont, having the French or Acadian settlement along the ridge to the northward of it, and the small river St. Jacques, with its sawmills, ½ mile from it in the opposite direction. This church has a tower with a portico attached, and forms a very useful landmark. Haldimand River, shallow, and running in to the southward about 2 miles, is about halfway between the church and Cape Egmont, and has sand hills on its west or outer point of entrance. From those sand hills

a sand bar, dry at low water, extends 3 or 4 miles to the northward, parallel to the shore, having very narrow channels through it, which are said to shift at times during heavy westerly gales. At the time of the Admiralty survey the principal channel was pointed out by two small beacons on the shore, about a mile to the southward of the church. The course in, with those beacons in one, was S. 76° E., turning short to the southward within the bar into a harbor for small schooners, with 5 feet in it at low water, and extending to the entrance of Haldimand River.

There is a conspicuous white house between Cape Egmont and Red Head or Dutchman Point. A village is situated midway between Cape Egmont and the Roman Catholic Church. The houses on the east part of the bay are somewhat scattered.

West Point.—The western point of Prince Edward Island consists of sand hills 12 feet high. Excepting in the direction of the spit the shallow water does not extend far from it, and there is good anchorage under it in winds from between north and east in 4 fathoms, fine sandy bottom.

West Reef is a narrow and rocky ridge, with irregular soundings from 2¾ to 5 fathoms. The least water, 16 feet, is near the middle of the reef, and there are 18 feet near its southern extreme, which bears from West Point N. 74° W. 3½ miles, and is distant 2½ miles from the nearest part of the shore. Its northern end is 3½ miles offshore at the highest part of the cliffs between McWilliams Cove and Cape Wolfe.

There are no leading marks for this reef, and as there are 13 fathoms in one part close to its outer edge, it is very dangerous to ships rounding West Point, and can only be certainly avoided at night or in thick weather by following the edge of the bank of soundings off the main land in 9 or 10 fathoms, which will lead past it at the distance of 3 miles to the westward. There is a passage within the reef, between it and the West Spit, but it is narrow, with irregular soundings and strong tides, and should therefore never be attempted in a large vessel.

Tides.—The strength and direction of the tidal streams about the West Reef are very irregular, being influenced by winds, varying also with the time of tide, and probably with the age of the moon. In the deep-water channel passing close on the outside of the West Reef the rate of the stream sometimes amounts to 2½ miles per hour, causing a heavy sea when running against the wind.

West Spit.—The West Spit of sand upon sandstone, covered in some parts with only a few feet of water, runs out from West Point 3 miles to the N. W., and then trends N. E. within the West Reef, so that the latter overlaps it at the distance of ½ mile. There is a "cul de sac" between the spit and the shore, open to the northward, and in which there are from 6 to 4 fathoms water.

Miminegash Reef is a ledge of rocks nearly dry at low water, and nearly a mile in length parallel to the shore, from which its outer edge

is distant ½ mile. It lies directly off the sandy beach and across the outlet of North Miminegash Pond, which is 15 miles from North Point. There are 2½ fathoms water between the reef and the shore, and vessels have in one or two instances been moored there during the summer months to take in cargoes of lumber; but it is a very unsafe place.

North Point is of low red cliffs. It has a reef extending from it to the northward and eastward 1¼ miles to the depth of 3 fathoms; moreover rocky and irregular soundings from 6 to 7 fathoms continue for several miles farther out to the NE., causing at times a dangerous breaking sea, and terminating in a small patch of rocks on which there is little more than 4 fathoms in low spring tides, and which bears from the North point N. 21° E. 4¼ miles. Fishermen report the existence of a shoal of 3½ fathoms, which breaks in bad weather about 8 miles N. E., which is most probably the 4-fathom patch. The inner part of reef dries out ½ mile from the point, affording shelter to fishing schooners, which shift from side to side as the wind changes.

The West Coast of Prince Edward Island, from the west to the north point is unbroken, and formed of red clay and sandstone cliffs, with intervening sandy beaches, affording landing for boats in fine weather. There are several Ponds where boats can be secured, such as Nail and Black Ponds, and North and South Miminegash, but their outlets through sandy beaches are all nearly dry at low water and of no use to vessels. The shallow water runs out to considerable distances off various parts of this coast, and, as a general rule, for large ships it should not be approached nearer than the depth of 11 fathoms at night or in thick weather.

EAST AND NORTH COASTS.

Cape Bear, the southern point of the east coast of Prince Edward Island, will be known by the large rock, 12 feet high, which lies close under its cliffs of red sandstone; and Murray Head, a mile farther to the northward, by its forming the extreme northeastern point of the cliffs, where they turn abruptly to the westward towards Murray Harbor.

Bear Reef runs out to the eastward from between Cape Bear and Murray Head, and is composed of sandstone and large stones. There is but little water over the greater part of this extensive and irregularly shaped reef, which has 7 or 8 fathoms close to its edge, and is therefore dangerous to vessels rounding the cape at night or in foggy weather, when they should not approach nearer than the depth of 10 fathoms either to the eastward or southward of the reef.

Mark.—There are no close leading marks for passing to the eastward of this reef, but Panmure Head and Terras Point in one, bearing N. 20° W., clear it at the distance of one mile in that direction; at night the light on Panmure Head must be kept open of Terras Point. Guernsey Point kept well open to the southward of Black Rock Point will lead to the southward.

Water.—At the distance of 700 yards to the southward of Murray Head there is a fine little stream of fresh water worthy of notice, because there are so few places on the island where a large ship can readily water. Boats can land there in westerly winds, when vessels will find good anchorage under the head.

Fishermans Bank is of sandstone, thinly covered with stones, gravel, and broken shells. From the least water, 4 fathoms, Murray Head, the nearest land, bears west 7½ miles; and there is another patch with 5 fathoms ¾ mile farther east. There are irregular soundings, from 10 to 20 fathoms, between this bank and Bear Reef, and in every other direction around it from 15 to 20 fathoms. The steeple of the English church at Georgetown, in line with Panmure Head, bearing N. 52° W., would lead over the bank in 5 fathoms; but the church can seldom be seen from the bank, being distant from it 15 miles.

Murray Harbor has an exceedingly dangerous bar of sand, over which 10 feet can be carried at low water in ordinary spring tides; but strong easterly winds send in so heavy a sea as to render it at times impassable.

On the outer edge of the bar a *buoy* is moored in 3 fathoms, with the white beacon on old Store point (the sandy south point of entrance) in line with the black ball on the white gable of the transit barn, bearing S. 54° W. The barn stands on the southern shore of the harbor ¾ mile within the entrance, and when in line with the beacon leads in through the deepest water (1860.) There is, moreover, an inner buoy in the fairway, ½ mile within the outer one, and which is intended to enable vessels to run in when hazy weather prevents the leading mark from being seen.

Directions.—To run in, look out for the outer buoy, or, being in not less than 5 fathoms, bring the light-houses or the white beacon and the black ball on the white gable of the transit barn in line, bearing S. 54° W., and keep them so exactly until the vessel arrives about 300 yards from the beacon, when haul a little to the northward, so as to pass Old Store Point at the distance of about 50 yards.

Anchorage.—Anchor within Old Store Point, or to the west of it, at any distance not exceeding ¼ mile, because farther in the channel which passes to the southward of all the islands becomes very intricate, and would be difficult to follow without a pilot. The depth, in the anchorage recommended, is from 3 to 5 fathoms, with sand and clay bottom and a tide of 2 knots.

The entrance of Murray Harbor, between Old Store Point and the long sandy spit which runs out to the SW. from Cody Point, is more than ½ mile wide, but it is all nearly dry at low water, excepting the channel already described. Within this entrance the harbor is of great extent, containing five wooded islands and several rivers or sea creeks on either side, besides the main inlet, Murray River, which is much larger than the rest, and navigable to the distance of 6 miles from the

entrance, or nearly to the dam which has been constructed across it near its head. There are flourishing settlements all around, the principal one being at South River, where the English church, distinguished by its steeple, will be seen on the southern shore 2 miles within the entrance of the harbor.

Graham Ledge.—At 4½ miles from Murray Head is Graham Point, from which Graham Ledge runs out one mile. The shallowest part of this ledge, with 6 feet least water, bears N. 45° E. 800 yards from the extremity of the point. There is also a rocky shoal one mile farther to the northward which runs out ⅔ mile from between Terras and Smith Points, and foul ground with from 4 to 7 fathoms at low water extends off the latter to the distance of 1½ miles.

Georgetown Harbor, sometimes called Three Rivers, is situated on the SW. side of Cardigan Bay, 3 miles within Panmure Head. It is the finest harbor in the southern part of the gulf, excepting Charlottetown, having depth of water and space sufficient for the largest ships. The rise of ordinary spring tides being only 5 feet is a great disadvantage as compared with Charlottetown.

Coal.—About 300 tons are usually kept in stock, exclusive of the quantity stored by the railway department; generally about 550 tons.

Vessels of less than 19 feet draft can coal alongside the railway wharf. In the summer months, with short notice, coal can be brought alongside in schooners of 30 to 60 tons.

Telegraph and Railway.—Georgetown is connected with Charlottetown by telegraph and railway; there is steam communication with Pictou once a week during the summer; and as often as possible, before and after the close of ordinary navigation, by a steam vessel specially constructed for breaking through ice. This vessel is usually unable to make the passage from Georgetown to Pictou between the end of January and the end of March.

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Supplies.—Almost all kinds of supplies may be obtained at Georgetown, but fresh water in large quantities only from wells, as in most other parts of the island.

Panmure Island is in great part wooded, and has cliffs of red sandstone 40 feet high along its northeastern shore. It is joined to the land to the southward by a narrow sand bar always above water and more than a mile in length. Within this bar is St. Marys Bay, and farther westward Sturgeon and Livingstone Bays, all three having a common entrance to the NW. of the island, between Panmure Spit and the shoal off Grave Point, and which, although very narrow, has depth of water sufficient for vessels of large draft.

Panmure Ledge is of sandstone, and its outer extreme in 5 fathoms and ¾ mile offshore, will be just cleared by keeping Graham Point and and Murray Head in one, bearing south.

Panmure Shoal.—Panmure Shoal extends to the distance of ⅔ mile off the northern shore of Panmure Island; and Panmure Spit, which forms the western side of the shoal and is of sand, dry at low water equally as far to the NW. from Billhook Point, the NW. extreme of the island. The buoy marking its northern edge is a black can buoy; and a black spar buoy marks the shoal extending eastward from Grave Point.

Cardigan Shoal, stretching to the south and east from Cardigan Point, which separates Cardigan River from the harbor, is an extensive shoal of sandstone; the least water on it is 4 feet, and it has only 6 feet at low water ¾ mile out from the shore. The red can buoy moored on its SE. extreme in 5 fathoms is distant one mile from the low cliffs at the extremity of the point. From this buoy Panmure Head (distant 1¼ miles) is in one with Terras Point, bearing S. 21° E.; and French Point is seen over the sandy spit of Aitkins Point, and in one with its wooded extreme, bearing N. 85° W.

On the SW. extreme of the Cardigan Shoal a red can buoy is moored in 4 fathoms with Cardigan Point bearing N. 7° E.; Brudenell Islet and Gaudin Point touching and bearing N. 60° W.; and the buoy on the Panmure Shoal S. 24° W., distant ¼ mile.

St. Andrew Shoal.—A buoy, with only 8 to 10 feet of water between it and the shore, is moored in 4½ fathoms east 800 yards from St. Andrew light-house.

The Knoll, a small sandy shoal, probably based upon sandstone, and with 9 feet least water, lies just outside the entrance of Georgetown Harbor, and directly in the way of its navigation. There is a red can buoy on its SW. extreme, with the north extreme of Boughton Island and Cardigan Point touching, and bearing N. 64° E.; Grave Point S. 25° W.; the west side of Thrumcap Islet N. 2° E. 850 yards.

Thrumcap Shoal runs out from the Thrumcap (which is a small wooded and cliffy islet joined to the eastern point of entrance of Georgetown Harbor by a sand bar) 600 yards in a southwesterly direction. On its western extreme, in 3 fathoms, a red cask buoy is moored with the cupola and the steeple of the churches in Georgetown in one, bearing N. 15° W., the NW. side of the Thrumcap N. 55° E. This shoal, which is of sand, and dry at low water nearly all the way out to the buoy, completes the shelter of the harbor, preventing any sea of consequence from rolling in.

The entrance, between the Thrumcap and St. Andrew Point, on the southwestern shore, is ⅔ mile wide, but the shoals diminish the breadth of the channel to 450 yards, and it is still narrower at the knoll, where it is scarcely 400 yards; whilst farther out still, between the Cardigan and Panmure Shoals, it is no more than 500 yards, considering it to be bounded by the depth of 3 fathoms on each side. Within the Thrumcap the northern shore of the harbor forms a bay ¾ mile wide, the

NW. point of which is Gaudin Point, having a sandy spit running out from it ¼ mile to the SW.

Anchorage.—The usual and best anchorage in Georgetown Harbor for large vessels is between this spit and the Thrumcap Shoal, with Doctor Point touching Brudenell Island, and the shore end of the pier in a line with the square tower of the English church, good holding ground, mud; but smaller vessels may anchor farther within the bay, and will find 2¾ fathoms within the distance of 200 yards from the wharf at the town.

Observe that, in addition to the aid afforded by the buoys, the light-house on St. Andrew Point, kept in line with a mast ½ mile west of the light house, leads in between the Panmure and Cardigan Shoals nearly in mid-channel until Brudenell Islet and Doctors Point come in one, bearing N. 54° W.; when the last named objects kept touching lead into the harbor.

Approaching the harbor from the southward, round Panmure Ledge by the lead in 7 fathoms, or by keeping Murray Head open to the eastward off Graham Point till the north side of Panmure Island bears as far to the westward as N. 84° W., when the vessel may haul in to the northwestward, following the northern edge of the Panmure Shoal until the light-house and mast bearing N. 87° W. can be made out and brought in one, as before directed. If it should so happen that, from thick weather or other cause, this mark can not be seen, the northern edge of the Panmure Shoal may safely be followed by the lead, in 6 fathoms, to within ½ mile of the buoy, when the shoal becomes too steep to be safely followed farther. In like manner the southern edge of the Cardigan Shoal may be followed from the outer buoy to the inner buoy on its SW. extreme, and the vessel may either bring up in the outer anchorage, ½ mile within the latter in a line towards the Thrumcap, or proceed into the harbor, as may be expedient. Between the Gaudin Spit and Aitkins Point the channel of the harbor is only 350 yards wide, from the depth of 3 fathoms to 3 fathoms, and carries 6½ fathoms water; but it expands again immediately, affording excellent anchorage all the way to Brudenell Point, one mile above the town.

Tides.—It is high water, full and change, in Georgetown Harbor at 8h. 40m., by the mean of the morning and evening tides; the latter being generally the latest by about an hour in the summer months; springs rise 5 feet, neaps 3¼ feet. The rate of the tidal streams does not exceed ¾ knot.

Brudenell and Montague Rivers.—The former, the northernmost of the two, is navigable for large vessels to Brudenell Islet, 1¼ miles up and for small craft and boats about 3 miles farther, to the head of the tide. Vessels of considerable burden can ascend the Montague nearly to the bridge, a distance of 4 miles, and boats about a mile farther to where the tide ends. The fresh-water streams at the heads of those sea creeks are mere brooks.

Cardigan River, which with the other two just noticed has occasioned Georgetown and harbor to be called Three Rivers, is much the largest of the three, being navigable for the largest ships to the distance of 5 miles above Cardigan Point; and smaller vessels can ascend it 2 miles farther, or to within ½ mile of the head of the tide, where the fresh water is insignificant in quantity. This river, which enters Cardigan Bay on the NE. side of Cardigan Point, is rendered somewhat difficult of entrance by the Macphee Shoal and the Maitland Flat, which, are very steep, and contract the navigable channel to 400 yards.

Cardigan Bay is 3¼ miles wide at its entrance between Panmure and Boughton Islands. It affords excellent anchorage in from 6 to 10 fathoms, mud bottom, with winds off shore, but winds from NE. to south send in a heavy sea.

Boughton Island is united on the NE. side to Bruce Point by a dry sand bar one mile in length, and is divided into two parts, of which the southern, ⅓ mile long, is joined to the remainder by a double bar of sand and shingle inclosing a large pond. Boughton Ledge runs out at this bar to the distance of 1,200 yards to the eastward, and has rocks near its outer extreme, which always show. Boughton Point, the south extreme of the island, is a cliff of red sandstone 30 feet high, and has a rock, which dries, off it, and shallow water to the distance of ½ mile. Rocky and irregular soundings, 4 to 5 fathoms, run out to the eastward still farther, and therefore a vessel of large draft, at night or in thick weather, should not round the point in a less depth than 9 or 8 fathoms.

Off the west side of the island a bank, with from 3 to 5 fathoms, extends to the distance of 1¼ miles; and farther to the westward there are dangerous shoals; which, together with the Boughton Split and the Mosquito Sands, extend along the NE. shore of the bay nearly to Maitland Point at the entrance of the Cardigan.

Off Boughton Sandbar and Bruce Point the shallow water extends ⅔ mile, and in Boughton Bay the line of 3 fathoms is a mile out from the shore.

Boughton or Grand River has a dangerous bar of sand one mile out from its entrance, and over which 6 feet, at low water ordinary spring tides, can be carried in a very narrow channel marked out by three buoys. The outer buoy is moored in 3 fathoms, the next in 2 fathoms, and the inner one in 11 feet; the bar of 6 feet being between the two last. At a short distance within the inner buoy, the sands on each side are dry at low water, and the channel can generally be seen all the remainder of the way to the entrance, where it passes close round the northern point of the long sand-bar which stretches across from the southern shore, to within 350 yards of Banks Point, where there is a wharf and a ferry.

Immediately within the entrance the inlet is a mile wide, but the channel is divided, narrow, and intricate, and marked out by stakes between sandy shoals for about one mile; after which it is clear, wide, and has

from 3 to 5 fathoms water in it, to the Narrows, 3 miles from the entrance. Boats can ascend 3 miles farther, or to the bridge. There are flourishing settlements on each side of this extensive inlet, which, if it were not for the shallow bar, would be a fine harbor.

Little River, Fortune River, Rollo Bay, and Colville Bay and River, occurring in order in proceeding along the coast to the NE., are tide inlets nearly barred up with sand, and having small streams at their heads; they are places only fit for small craft and boats, having from 3 to 5 feet over their bars at low water.

Colville River, situated in Colville Bay between Souris Head and Swanton Point, and distant 12 miles NE. of Poughton Point, is the most important, being the place where the produce of the more eastern parts of the island is principally shipped. Colville Bay affords good anchorage with off shore winds, and the settlement of Souris, and the church, will be seen on its eastern shore.

Souris is a large village, with a wharf and 3 large fish-curing stores on it; the eastern entrance is marked by a red flagstaff, and 3 black buoys mark the passage up the river for small craft. The Roman Catholic church is an excellent landmark; Souris Head is bluff and covered with trees, whilst the point near it is red sandstone and bare.

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Coast.—Sharp cliffy headlands and points of red sandstone separate the bays in which these rivers are situated, the cliffs being from 25 to 50 feet high, and the shallow water off them not extending beyond the distance of 600 yards, excepting at Eglington Point (separating Fortune Bay from Eglington Cove), where the reef extends a mile with from 3 to 4¼ fathoms over rocky bottom; but this is within the line joining Howe Point on Souris Head, and therefore out of the way of vessels running along the coast.

The coast to the eastward of Colville Bay is bold and free from danger, excepting Hervey Reef, which extends 800 yards from Hervey Point, and has on it the Shallop Rock, which always shows. Hervey Point is 5 miles from Colville Bay, and will be known by its being the eastern point of Hervey Cove, in which there are some remarkable and high sand-hills. At Basin Head, one mile farther to the eastward, the cliffs terminate and sand-hills and sandy beach form the shore nearly all the way to East Point.

The East Lake is a shallow and narrow pond, within the sand-bars, extending from Basin Head to within 2 miles of East Point, and having a narrow outlet (2 miles from the head), which is nearly dry at low water. Boats and small craft enter it for produce, the country being well settled along its northern shore.

East Point.—The eastern point of Prince Edward Island is a cliff of red sandstone from 30 to 60 feet high, from which a reef runs out ⅔ of mile to the depth of 3 fathoms, and not quite a mile to 5 fathoms. In vessels approaching this reef at night, it should be remembered that

the flood tide comes from the northward, setting strongly upon and over it, and afterwards southwestward, between it and the Milne Bank, at the rate of 2½ knots. There is frequently a great rippling off the point, but the reef does not extend farther than has been stated. Caution is necessary when navigating in the immediate neighborhood of East Point, as the tidal streams there are reported to be irregular both in direction and velocity.

Anchorage.—The anchorage is not good to the northward of East Point, the ground being either loose or rocky; but to the southward of it there is good riding with northerly winds as far westward as the East Lake outlet, in a moderate depth of water, and over a bottom of red sand.

Tides.—The tides run at the rate of 2½ knots between the north end of Milne Bank and the point, but are not nearly so strong farther to the westward.

Milne Bank, if considered to be bounded by the depth of 10 fathoms, is 5¾ miles long and 1¾ miles broad; the bottom being sandstone thinly covered here and there with red sand. The soundings are irregular, between 6 and 9 fathoms, over the northern part of the bank; but towards the southern end, and close to the outer edge, there is a shallower part, 1½ miles in length, where the least depth is found, namely, 4½ fathoms at low water, in spring tides.

The extreme south end of this bank, in 10 fathoms, bears S. 24° E. 6¼ miles from East Point; and the north extreme N. 88° E. 2 miles. Between the northern part of the bank and East Point there are from 10 to 11½ fathoms, red sand bottom, the deepest water being close to the bank. The eastern or outer edge of the bank is steep-to, there being from 12 to 15 fathoms close to it, and there is frequently a great rippling along it, caused by the abrupt opposition which it presents to the flood tide from the NE. The sea is very heavy here, and also off the point, in strong NE. gales.

The Coast from East Point to St. Peters Harbor, a distance of 33 miles, is unbroken, formed of red sandstone cliffs, with occasional patches of sandy beach at the mouths of small streams, where boats can land only in fine weather or offshore winds. Surveyors Inlet will not now admit a boat, being closed with sand.

The shallow water does not extend beyond 1½ mile anywhere off this division of the coast, and there are in general 10 fathoms water within one mile of the shore; the bottom being of sandstone, and the anchorage bad in consequence.

St. Peters Bay, runs in 7 miles to the eastward, with a depth in some parts of 3 fathoms; nevertheless it forms a harbor only for small vessels, there being only 10 feet at low water over its bar of sand; the outer edge of which, in 3 fathoms, is distant ⅔ mile from the shore. The channel through the bar, in which this depth of 10 feet at low water can be carried, is indicated by two buoys; it is liable to shift in heavy gales,

and there is a sharp turn to the eastward immediately within the entrance; so that altogether it is a very dangerous place for a stranger to attempt, or indeed for anyone excepting in fine weather.

The Morrell River enters this harbor on the SW. side 3 miles in from the entrance, and is navigable for boats to the same distance inland, where the piles which steady the floating bridge prevent farther ascent. There are several smaller streams on the same side of the harbor, and at its head St. Peters River, which, like the rest, becomes a mere brook at the head of the tide.

The shores of the harbor are well settled, and there is a church on the eastern shore near its head, and another with a white steeple to the westward. Its position will be recognized by its magnificent range of sand hills, which near the entrance attain the elevation of 70 feet above the sea, and continue for several miles to the eastward; after which there are no more high sand hills till we arrive at Surveyors Inlet, within 4 miles of East Point.

Tides.—The rate of the tide streams in the narrow entrance to St. Peters Bay is nearly 3 knots (ebb at times 4 knots).

Savage Harbor, at 9 miles to the eastward of Tracadie, has only 2 feet at low water over its bar, and is therefore only fit for boats or very small craft. The church here is a good landmark. Just to the westward of its entrance there is some comparatively shallow water, 4¼ fathoms, over rocky bottom, at the distance of a long mile from the shore. The distance across from the head of this harbor (which runs inland 3 miles) to the head of the Hillsborough River is less than one mile, and there is a road across.

Tracadie Harbor, or Bedford Bay, is distant 4 miles from Cape Stanhope and 13 miles from Cape Turner. Its entrance is at the western extremity of a remarkable range of sand hills 50 or 60 feet high. The bar of sand, which shifts occasionally in heavy gales, extends out to the distance of ¾ mile from the entrance, and has a varying depth of from 5 to 9 feet over it at low water in a channel only 80 yards wide at the time of the survey. The place, therefore, is only fit for small vessels, and even they require the assistance of buoys and favorable weather to take the bar with safety. The harbor is 3 miles wide within the sand bar, and carries 2½ fathoms water; it sends off a branch to the westward called Winter Cove, and runs in 4 or 5 miles to the southward, approaching at its head to within 1½ miles of the Hillsborough River, to which there is a good road across.

Tides.—It is high water, full and change, at the entrance of Tracadie Harbor at 7 h.; springs rise 3½ feet, neaps 2 feet. The heights vary according to the direction of the wind. The rate of the tide streams in the entrance is about 2 knots.

Cape Stanhope, on which there is a sand hill 30 feet high, ½ mile to the eastward of the entrance of Little Rustico, has a dangerous reef running out from it ¾ of a mile to the depth of 3 fathoms and one mile to

5 fathoms. On some parts of this reef there is only one foot of water at the distance of ½ mile from the shore. Between Cape Stanhope and Cape Turner the coast forms a curve or bay, in which are situated the entrances of the Rustico Harbors, and where the 3-fathoms edge of the shallow water is seldom less than ¾ mile offshore. Farther out the holding ground is bad, being of red sandstone, with an occasional thin covering of sand.

Little Rustico Harbor has become so shoal as to be practically useless for general navigation.

Grand Rustico Harbor has two narrow sandy entrances on either side of McAuslin Island, and which are distant 3 and 5 miles respectively to the SE. of Cape Turner. Although vessels of two or three hundred tons are occasionally built here and floated light over the bars in fine weather, yet it is a place only fit for small vessels; for its shifting bars of sand are extremely dangerous, having a varying depth of 4 to 6 feet, and extending out ¾ mile from the shore; at which distance there are 3 fathoms at low water. The line of deepest water over each of these bars is pointed out by two buoys, the positions of which are changed as occasion requires.

Hunter and Wheatley Rivers, navigable for boats to the distance of 5 miles inland, with Winter Creek between them, run into this shallow place, which extends 5 miles along the coast within the sand bars of McAuslin Island and Brackley Point, which latter separates it from Little Rustico.

There are extensive settlements here of Acadians and others. The two churches on the western side of Winter Creek will be recognized by their steeples; coming from the eastward these churches do not open out very soon, but the harbor may be recognized by the remarkable hummocks in its vicinity. There is also a small chapel at the settlement of New Glasgow, on the western side of Hunter River, but it can not be distinguished from the sea.

Tides.—It is high water, full and change, in Grand Rustico Harbor at 6h and 40m.; springs rise 4 feet, neaps 2 feet. The rate of the tide streams in the entrances is 2 knots.

Cape Turner is the highest cliff on the island, being of red sandstone and conglomerate 120 feet high.

New London Harbor, 1½ miles SE. from Cape Tryon, has its entrance at the northwestern extremity of a long range of sand hills, the highest of which is 55 feet above high-water mark. The entrance of this harbor is ⅓ mile wide, and carries 3 fathoms water, but it is nevertheless only fit for small vessels, in consequence of its dangerous and shifting bar of sand, over which, at the time of the survey, only 5 feet at low water could be carried in a very narrow channel, indicated by two buoys. The bar extends out to the distance of ⅔ mile from the entrance, and the shallow water one mile, at which distance there are 5 fathoms, over sandy bottom.

Within the entrance, the harbor is 3 miles wide, branching into two

principal and many smaller creeks, with small brooks at their heads. The two principal of these, namely Stanley and Mill Rivers, are navigable for small craft and boats to the head of the tide, a distance of 6 or 7 miles. There are increasing settlements and a fertile country around the harbor, the principal settlement being New London, where the English and Scotch churches are situated, on the western shore, 1½ miles within the entrance, the former being distinguished by its steeple.

Tides.—It is high water, full and change, in Granville Harbor at 6h. 10m. Ordinary springs rise 3½ feet, neaps 2 feet, unless increased by easterly winds.

Cape Tryon, 1½ miles NW. of New London Harbor, is a remarkable cliff of red sandstone, 110 feet high. The coast between Cape Tryon and Richmond Bay is nearly straight, and free from detached dangers; but the shallow water runs out a considerable distance, and a large ship should not approach nearer than the depth of 7 fathoms.

Richmond Bay is of great extent, running in about 10 miles to the southward, and crossing the island to within 2½ miles of the waters of Bedeque Harbor. It contains seven islands, and a great number of creeks or rivers, some of which are navigable for vessels of considerable burden, and all of them by small craft and boats. Grand River, which is the principal inlet, can be ascended in boats to the bridge, a distance of 7 or 8 miles.

There are fine settlements at Grand River, and also at Port Hill, in the NW. part of the bay within Lennox Island, and where several vessels load every year. There is an Indian church and settlement on Lennox Island, but it cannot be seen from the sea. There are also large settlements at the head of the bay, where the churches of St. Eleanor and Miscouche are seen on the ridge which separates its waters from those of the Straits of Northumberland.

Malpeque, which has given its name to the harbor, is one of the oldest settlements on the island, and, with its church, an excellent landmark, and the Roman Catholic college, with its two spires, to the eastward, stand on the neck of land between Darnley Inlet and March Water, 2½ miles south from the entrance of the bay. A competent pilot, or a chart on a large scale, could alone enable any one to navigate a ship through the various channels and inlets of this bay.

Malpeque Harbor, which is within the eastern entrance of Richmond Bay, has 15 feet over its outer bar at low water, together with depth and space enough within for a large number of vessels.

The principal entrance to the harbor is to the southward of Billhook or Fish Island and between it and Royalty Sand, which dries out a long ½ mile from Royalty Point. The ground is good in the usual anchorage, just within this entrance; the bar outside preventing any sea from coming in, and the Horse Shoe Shoals sheltering them from westerly winds down the bay. The other entrance, to the NW. of Billhook Island, is called the West Gully, and is so narrow and in-

tricate as to be only fit for boats or very small craft, although it has a depth of 9 feet over its dangerous bar of sand, which is 1¼ miles out from the shore. There will be no probability of this being mistaken for the main entrance, even if the buoys were gone, if it be remembered that the main or ship channel is to the SW. of all the sand bars, including Billhook Island, and between them and the red sandstone cliffs of Cape Aylesbury, the SE. point of the bay.

Supplies.—Abundance of fresh provisions may be obtained at Malpeque, but water can only be procured from wells, so that it requires considerable time and labor to supply a ship for a voyage.

The Bar of Malpeque Harbor runs out eastward 2¼ miles from Billhook Island, and then turns to the southward, so as to join the shore to the eastward of Cape Aylesbury. It is of sand, thinly and irregularly spread upon sandstone, the rock being in many places quite bare. It is exceedingly dangerous in bad weather, when all signs of a channel are obliterated by heavy breakers. The northern part of the bar, to the distance of 1½ miles out to the eastward from Billhook Island, is very shallow, there being in some places only 4 feet at low water; but the extent of this shallow part is well shown by a good cross mark, namely, the church of Malpeque and Darnley Point in line, bearing S. 11° W.

The narrowest part of the Ship Channel just within or to the westward of the above-named cross mark is 200 yards wide, and carries 4 fathoms water. The Inner Bar, of sandstone, and with 19 feet at low water, is ¼ mile farther in, and has in general a buoy upon it.

Directions.—Vessels entering should get Darnley Point lights (about ⅜ mile east of Cape Aylesbury) in range outside the bar, run in on the range S. 21° W. until the Fish Island range lights are brought into one, when these latter should be kept in range on a course N. 85° W. until the mid-channel buoy is reached, when the course of the channel is marked by the harbor buoys.

Anchorage.—Vessels may anchor outside the bar in from 5 to 7 fathoms, sand bottom, to wait for a pilot; and in the event of the wind or tide failing, the anchorage is considered tolerably safe between the Inner Bar and the entrance, and probably is so with any wind that would prevent a vessel from running in, but the holding ground is not good there, and should only be trusted in fine summer weather. Within the harbor the bottom is of sand and clay, and a vessel may choose any depth from 3 to 10 fathoms, the deepest water being close off the point of the Royalty Sand.

Tides.—The rise is so irregular, that it would not be safe to count upon a rise of more than 2 feet on any particular day. NE. winds cause high tides; westerly winds produce the contrary effect. The morning tides are the highest during the summer months. The rate of the tides is strongest in the entrance and off the point of the Royalty Sand, running in spring tides 2½ knots. In the Ship Channel, from the entrance to the bar, the rate is 1½ to 2 knots. Within the bay the tides are in general much weaker, seldom amounting to one knot.

Cascumpeque Bay is of great extent, and broken into inlets or rivers, which penetrate the country in variety of directions and to the distance of many miles. The principal entrance of Richmond Bay, leading into Malpeque harbor, is 20 miles from Cascumpeque, the intervening shore being formed exclusively of sand bars and sand beaches, from which the shallow water extends ⅔ mile to 3 fathoms and one mile to 5 fathoms. In the above-named distance there are two openings through the sand bars, Conway and Cavendish Inlets, which afford shelter to boats, and are distant 7 miles and 11 miles respectively from the lighthouse at Cascumpeque.

Boats can enter Richmond Bay by Conway Inlet, passing to the westward of Lennox Island, at high water.

Cascumpeque Harbor, sometimes called Holland Harbor, is known by the remarkable high sand hills, 3½ miles to the southward of its entrance; these are the remains of a range of sand hills formerly known as the Seven Sisters, and are 50 feet high. There are no high sand hills to the northward of the harbor.

The entrance to this harbor is 350 yards wide, between two sand bars resting upon the sandstone which forms the Inner Bar (marked by a small black barrel buoy), over which there are 10 feet at low water. The Outer Bar, of sand, lies 1¼ miles out from the entrance, and has a depth of 9 feet at low water, in a very narrow channel indicated by a black buoy which vessels must pass close to the southward of. Two lights shown from masts in the town of Alberton lead over the Inner Bar and up the harbor.

The channel, from the one bar to the other, and between sand, covered by only a few feet of water, is 200 yards wide, and affords tolerable anchorage in from 2½ to 3½ fathoms sand bottom; the best berth being just outside the entrance, where the sand on each side dry at low water. The diminution of depth is attributed to the opening of a second entrance into the bay; the beach in the sand bar, which was at first effected by the sea during a heavy NE. gale, having been increasing ever since. This newer entrance into the bay, which has, at present, 5 feet over its bar, is about 2 miles to the southward of the harbor.

Tides.—It is high water, full and change, in Cascumpeque Harbor at 5h. 40m.; springs rise 3 feet, neaps 2 feet; but this is not regular. Strong easterly winds cause a rise of a foot or more in all the harbors of this coast.

It must also be observed that the rise given is always that of the best tide in the 24 hours; and that the morning spring tides are the highest during the summer months. It frequently happens at or near the springs that the evening tides rise only a few inches, and sometimes they entirely disappear, causing single day tides for a short time.

At or near the neaps the two tides of the same day become nearly equal in time and rise for a short time. There is reason to believe that the

diurnal inequality of the tides ceases for a time soon after the equinox, and that it is reversed in winter, but the ice has hitherto prevented observations during that season. These remarks apply to all the harbors of this island and of the neighboring provinces; their importance to vessels seeking refuge and taking the dangerous bars in bad weather will be evident. The rate of the tidal streams in the entrance of Cascumpeque Harbor is in general 1½, but frequently over 4 knots.

Caution.—As the bars of Cascumpeque Harbor shift so much, a pilot would be indispensable to a stranger visiting it for the first time.

In strong easterly gales the bar is covered with a continuous line of heavy breakers.

The best landmark in this neighborhood is the Roman Catholic Church at Tignish, the lofty spire of which is distinguished before any other feature of the coast from the eastward, and is visible also to vessels on the west side of North Point.

Anchorage.—There is good anchorage off the bar in fine weather in 5 or 6 fathoms, sand bottom. Within the entrance the harbor has plenty of water and a clear channel, which, after running in one mile to the westward, turns to the southward within Savage Island and between it and Hill Point, where there is a wharf at which vessels generally load.

Alberton, a small town, rapidly rising in importance, is situated on the north shore of Cascumpeque Harbor. There is a wharf here in connection with the railway. The churches, court-house and buildings generally are of wood and painted white.

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Tignish River.—From the north point of Prince Edward Island to Cape Kildare there is little requiring notice, excepting the river Tignish, with only 2 feet water in its narrow sandy entrance at low tide, and affording shelter to fishing boats; and where also there is a settlement, principally of Acadians, and two churches, the new one of brick (standing a mile to the eastward of the old one), forming with its spire one of the best landmarks on the island. About a mile to the northward of the entrance a rocky ledge runs off to the distance of 1⅓ miles, with no more than 3 fathoms on it at low water.

Cape Kildare is a cliff of red sandstone 30 feet high, with the land about it red and surmounted by clumps of trees, one small knot, rather conspicuous, being detached when seen from the southward.

North Coast of Prince Edward Island.—The great bay formed by the northern coast of Prince Edward Island, and the difficulty of beating a ship out of it in heavy and long-continued NE. gales, has been already mentioned. That difficulty seems to be caused by an acceleration in the rate of the current so frequently found running past Cape Gaspé, Bonaventure Island, and the Miscou Banks, and which doubtless continues farther south; or it may arise from an extension of that general set to the southward so often experienced by vessels cross-

ing from the Bird Island towards Anticosti or Cape Rosier, and which has been observed to be increased by strong NE. winds; as might have been inferred from the great rise of water which they cause in all the southern ports of the gulf.

The set of the tidal streams may also at times be very unfavorable to a vessel under the supposed circumstances, for the stream of flood is known to set to the southward into the bay, in conformity with the progress of the reflux tide wave, from North Point southeastward to St. Peters, whilst farther eastward the tide which comes from the NE., from between the Magdalen Islands and Cape Breton, also sets toward the shore, especially near East Point.

The reflux course of the tide wave on this coast has been inferred from observations made during the Admiralty surveys of all the harbors; from which it appears that the time of high water on the full and change days becomes later in succession, in proceeding southeastward from North Point to Cascumpeque, Malpeque, Grenville Bay, Rustico, Tracadie, and St. Peters. At St. Peters, the time of high water, full and change, namely $8\frac{3}{4}$ hours, is rather later than at East Point, and as there is also a considerable increase in the rise of the tide, there seems reason to conclude that the two tide waves meet somewhere about this harbor, the western being 12 hours older than the eastern wave.

With the exception of a few places off the bars of the harbors the anchorage is, generally speaking, very bad all along the northern shore of the island, the bottom being of red sandstone, thinly covered occasionally with sand, gravel, and broken shells.

The harbors are all of the same character, having narrow entrances between sand bars, with dangerous bars of sand at various distances from the shore. They are only fit for small vessels, with the exception of Richmond Bay and Cascumpeque, and even those could not be safely run for in bad weather, and with a heavy sea running, at which times the breakers on their bars extend quite across, leaving no visible channel. New vessels are built in these harbors almost every year, the smaller for the Newfoundland trade; and besides the coasting schooners for produce, American fishing schooners frequently call at them for wood and water or shelter on the approach of bad weather.

Tidal Streams.—It will be convenient to divide the strait at Cape Tormentine into two nearly equal portions, distinguished by the different set of their tidal streams, and by different tide waves, which, advancing from opposite directions, meet in the central part of the strait. The course of these waves appears to be as follows: The principal tide wave, after entering the gulf between Cape Breton and Newfoundland, sends off, laterally, waves to the SW., on either side of the Magdalen Islands. The first of these, the eastern wave, coming from between those islands and the western shore of Cape Breton Island, arrives at the eastern entrance of the strait soon after 8 o'clock, and proceeds to the westward, making high water later in succession from east to west

as far as Pictou, which it reaches at 10 hours. At the same nominal hour, but 12 hours later, the other or western wave arrives at Cape Tormentine, having been retarded by the long detour which it has taken to the northward and westward of the Magdalen Islands, and by the great extent of comparatively shallow water which it has passed over in its subsequent progress to the SW. This wave makes high water later in succession at places along the eastern coast of New Brunswick, as we proceed to the southward; and, after entering the strait, from NW. to SE., contrary to the course of the other or eastern wave.

Thus, it is high water, full and change, at Miscou at about 2½ hours; at Escuminac Point, and the North Point of Prince Edward Island forming the western entrance of the strait, soon after 4 hours; at the West Point of Prince Edward Island at 6 hours; at Shediac at 8 hours; and at Cape Tormentine at 10 hours.

When, therefore, the eastern wave arrives between Pictou and the Wood Islands, the western part of the preceding tide wave arrives between Cape Tormentine and Cape Traverse. They then meet and combine to make high water at the same hour, namely 10 hours, or a little later in the harbors, all over the central portion of the strait from Pictou to Cape Tormentine; causing also an amount of rise of the tides everywhere more than double, and in some of the harbors nearly three times as great as that which occurs at either entrance of the strait.

The direction of the tidal streams corresponds generally, and in fine weather, with the progress of the tide wave, but is disturbed occasionally by strong winds. The eastern flood stream enters the strait from the NE., running at the rate of 2½ knots round the east point of Prince Edward Island, but is much weaker in the offing and over towards the southern shore. It runs round Cape Bear, and with an increasing rate along the land to the westward; is strongest in the deep water near the land, and runs at its extreme rate of 3 knots close past the Indian Rocks and Rifleman Reef. Losing strength as it proceeds farther to the NW., it is quite a weak stream, when it meets the other flood stream off the Tryon Shoals.

This eastern flood stream is not so strong along the southern or Nova Scotia shore, unless it be in the Caribou Channel for a short space near the Caribou Reef; and it is weak, not generally exceeding half a knot, in the middle of the strait.

The other or western flood stream comes from the northward, along the west coast of Prince Edward Island, sweeping round West Point, and running strongest in the deep water near the west reef, where its rate is 2½ knots. Over toward the New Brunswick shore its rates seldom exceeds 1½ knots, and this is its average speed as it pursues its course to the SE., until near Cape Tormentine, where the strongest part of the stream runs near the Jourimain Shoals, and thence to the southward round and over the dangerous Tormentine Reefs with a great ripple, and at the rate of 3 knots.

After passing these reefs, part of it curves round to the SW. with decreasing strength, and unites with the other flood stream in the B y Verte, whilst the remainder is lost in the central part of the strait. The ebb stream, generally speaking, pursues a contrary course to the flood, and at nearly the same rates.

From this account of the tidal streams it appears that a fast sailing vessel, under favorable circumstances, might enter the strait with the flood, and, arriving at Cape Tormentine soon after high water, might there take the ebb, and thus have the stream with her, with but slight interruption, from one end of the strait to the other. Or, a vessel beating with the flood might so time her arrival at the same point as to be able to continue her voyage in the same direction with the ebb.

The tidal streams were observed in general to change their directions soon after it was high water or low water by the shore; but not unfrequently there were exceptions to this which it would be difficult to account for with certainty. Strong winds in the gulf greatly influence the strength and direction of the streams in the strait, as well as the height to which the tides rise; moreover, as the two tide waves which meet in the central parts of the strait are twelve hours different in age, so they are in consequence of unequal heights, owing to the diurnal inequality; each of them being alternately and in turn the highest, and probably occasioning the stronger stream.

But it would require a long series of simultaneous observations at different points, and continued through the different seasons of the year, to reduce to order or to explain satisfactorily the seeming irregularities thus produced. Nevertheless, enough remains, of general occurrence during the summer months, which it is highly useful for the seamen to know, and which has been stated in consequence.

Directions.—Vessels bound to ports in the eastern division of the strait enter the gulf either through the Gut of Canso or by the island of St. Paul. In the first case, the bearing of the light at the northern entrance of the Gut will guide them up to cape St. George, from which, if bound to Pictou, there will be no difficulty in running along the land to the westward, if due attention be paid to the soundings in the chart, and afterwards to the bearing of Pictou Island and Pictou Harbor lights. If the weather be thick, or the light not seen, beware of the reef off the east end of Pictou Island, which should not then be approached nearer than the depth of 10 fathoms, especially if the flood-tide be running. For the dangers around that island, see pages 192 to 196; and for those on the opposite shore of Prince Edward Island, pages 219 and 220.

Vessels approaching from St. Paul Island and entering the strait at the east point of Prince Edward Island should not approach the latter nearer than the depth of 20 fathoms in thick weather. If the night be clear the lights on Sea-Wolf and Chetican Islands, East Point, and Cape St. George will be of service.

Cape Bear and its reef should not be rounded in less than 15 fathoms, under the same circumstances; regard being had to the light on Panmure Head; and then, if bound anywhere to the westward of Pictou, the vessel should be kept more over towards Pictou Island and the southern shore, where the soundings will guide her, till the Indian Rocks and Rifleman Reef are passed. The lights on Prim Point and Wood Island will greatly assist in passing the last named danger, after which the lead will again afford sufficient guidance along the Prince Edward Island shore, past the Tryon Shoals, and through the strait to the northwestward.

On the opposite, or Nova Scotia shore, westward of Pictou, the principal dangers to be avoided are the Middle Shoals between Pictou Island and Caribou, Amet Island and Shoals, and Waugh Shoal. The approach to all these is sufficiently indicated in thick weather by the soundings, and therefore a constant use of the lead and a careful reference to the chart will enable the intelligent seaman to pass them at all times in safety; and also to conduct his vessel to any of the harbors of this coast, where pilots will readily be obtained.

ADDENDA.

LIST OF LIGHTS INCLUDED IN LIMITS OF THIS WORK.

UNITED STATES.

Name.	Location.	No. of light.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Pumpkin Island	West entrance to Eggemoggin reach.	1	F	White tower connected with dwelling by workroom.	27	9	Fog-signal: a bell in answer to signals.
Eagle Island Point	On Eagle Island, at the head of Isle au Haut Bay.	1	F	White tower, attached to dwelling.	106	16	Fog-signal: a bell in answer to signals.
Deer Island Thoroughfare	On Mark Island, western entrance to Deer Island thoroughfare.	1	F	Square white tower, attached to white dwelling.	52	12	Fog-signal: a bell struck a double blow every 15 seconds.
Heron Neck	On S. point of Green Island, the southernmost of Fox Islands.	1	F. red	White tower, attached to the end of a white dwelling.	92	8	Fog-signal: a bell in answer to signals.
Saddleback Ledge	Near SW. end of Isle au Haut.	1	F	Gray granite tower; base white; white porch attached.	51	12	Fog-signal: a bell struck a single blow at intervals of 10 seconds.
Blue Hill Bay (formerly Eggemoggin).	On Green Island, entrance to Blue Hill Bay.	1	F	White tower and dwelling, connected by workroom.	26	9	Fog-signal: a bell in answer to signals.
Burnt-Coat Harbor	On S. end of Swan Island.		F	Two white towers; square; light on rear tower; keeper's dwelling near.	75	14	Fog-signal: a bell to answer to signals.
Bass Harbor Head	E. side of entrance to Bass Harbor.	1	F. red	White tower, connected with dwelling by porch.	56	13	Fog-signal: a hand-bell in answer to signals. (Guide to Bass Harbor.
Bear Island	One of the Cranberry Islands, about 6 miles NW. of Bakers Island light.	1	F	White tower, attached to white dwelling.	97	15	(Guide to NE. and SW. harbor. Fog-signal: bell struck by machinery giving one blow at intervals of 15 seconds. Life-saving station at Little Cranberry Island.

List of lights included in limits of this work—Continued.

UNITED STATES—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Bakers Island	Off Mount Desert Island, and S. of entrance to Frenchman Bay.	1	F. & Fl. every 1½ minutes.	White tower, connected with dwelling by workroom.	105	15	Whistling-buoy in 18 fathoms.
Crabtrees Ledge	On Crabtrees Ledge, about 400 yards off east shore of Crabtrees Neck, Frenchman Bay.	1	F. & Fl. every 2 minutes.	Conical iron tower, brown; black cylindrical foundation; gallery covered by a roof around base of tower.	54	.....	Illuminates entire horizon.
Egg Rock	On Egg Rock, Frenchman Bay.	1	F. red	On a square tower, rising from the center of a one-story square brick building; both white.	76	8	Fog-signal: bell giving two blows in quick succession at intervals of 20 seconds. Whistling-buoy marked E. R. in white letters 1½ miles S. 22° 45′ W. from Egg Rock light-house. Bell buoy off Sheep Porcupine Island, Bar Harbor.
Mount Desert	On Mount Desert Rock	1	F	Tower of granite, natural color; detached from the dwellings.	75	14	Fog-signal: a bell, single blow at intervals of 10 seconds.
Winter Harbor	On S. point of Mark Island, W. entrance to the harbor.	1	F	White tower, connected with dwelling by white workroom and a white wooden porch.	37	11	Fog-signal: a hand bell in answer to signals.
Prospect Harbor	On Prospect Harbor point	1	Fl. red & white every 30 seconds.	Tower of granite; attached to keeper's house.	45	11	Fog-signal: a hand bell in answer to signals.
Petit Manan	On S. end of island	1	F. & Fl. every 2 minutes.	Tower of granite; connected with keeper's house.	125	17	Fog-signal: a steam-whistle giving two blasts of 5 seconds each every minute; interval between blasts, 8 seconds and 42 seconds; a hand-bell in reserve.
Narraguagus	On SE. point of Pond Island.	1	F	Light above center of keeper's white dwelling.	45	12	Fog-signal: a hand-bell in answer to signals.

				house.			ouds each every minute; interval between blasts, 8 seconds and 42 seconds; a hand-bell in reserve.
Narraguagus	On SE. point of Pond Island.	1	F	Light above center of keeper's white dwelling.	45	12	Fog-signal: a hand-bell in answer to signals.
Nashe Island	Off the mouth of Pleasant River (east side).	1	F. red	Square white tower; connected with house.	47	12	Fog-signal: a bell strikes a signal and a double blow alternately at intervals of 20 seconds.
Moose Peak	On Mistake Island, west entrance to Bay of Fundy.	1	Fl. every 30 seconds.	White tower detached from house.	72	14	Fog-signal: a hand-bell in answer to signals.
Libby Island	On S. end of island, entrance to Machias Bay.	1	F	Granite tower.	52	12	Fog-signal: a trumpet, blasts of 7 seconds every 40 seconds; bell in reserve struck every 10 seconds.
Averys Rock	On Averys Rock in Machias Bay.	1	F. red	Square white tower; rising from center of a one-story dwelling; white.	68	14	Fog-signal: a bell struck by machinery every 11 seconds.
Little River	On an island at the mouth of Little River Harbor.	1	F. & Fl. every 1½ minutes.	Iron tower; painted brown.	40	11	Fog-signal: a bell struck by machinery every 30 seconds.
West Quoddy Head	Near Lubec, south side of entrance to Quoddy Bay.	1	F	Tower; red and white horizontal stripes.	133	18	Fog-signal: steam-whistle blasts of 3 seconds, intervals of 52 seconds; a bell rung by hand in reserve.
Lubec Narrows	S. end	1	Fl. every 15 seconds.	Brown tower; lantern black.	61	13	Fog-signal: a single stroke of a bell every 10 seconds.
St. Croix River	On Dochets or Demonts Island, opposite Red Beach.	1	F. & Fl. every 30 seconds.	White	71	12	Fog-signal: a hand-bell in answer to signals.

NEW BRUNSWICK.

Machias Seal Island	Near middle of island	2	F	White Octagonal; wood; white.	54 66	15 14	In line bearing N. 63° W. lead seaward of Murr ledges. Fog-signal: a whistle, blasts of 5 seconds every ¼ minute.
Gannet Rock	S. of Grand Manan Island	1	Int. every minute; fixed 45 seconds; eclipse 5½ seconds; flash 4½ seconds; eclipse 5½ seconds.	Octagonal; vertical black and white stripes.	66	12	Fog-signal: a gun fired every hour. Dangerous rocks extend 4 miles westward of the light-house.

List of lights included in limits of this work—Continued.

NEW BRUNSWICK—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
SW. Head	On Gulf Cliff, Grand Manan Island.	1	Fl. red and white every 2 minutes; 3 red flashes and 3 white flashes, with intervals of eclipse of 20 seconds after each group of flashes.	Square; wood; white; dwelling attached.	200	24	
Grand Harbor	On Fish-fluke Point, E. side of harbor, Grand Manan Island.	1	F	Square; wood; white; keeper's dwelling attached.	40	11	Fog-signal on Big Duck Island. The horn sounds blasts of 6 seconds' duration every 35 seconds.
Swallow Tail	NE. part of Grand Manan, near edge of the high cliff.	1	F	Octagional; wood; dwelling and out-buildings near.	148	18	Visible between S. 26° W. and N. 64° W., over an arc of 90°.
Long Eddy	On extreme NW. head; Grand Manan Island.	.....	.....	.....	80	.....	Fog-signal: blasts of 4 seconds, intervals of 16 seconds.
SW. Wolf Island	SE. point of island	1	Rev. every 1½ minutes.	Square; wood; white; on dwelling.	111	17 to 20	
Port St. Andrew	SE. part of town; N. side of entrance.	1	F	Octagonal white	42	10	Visible between N. 52° W. and S. 52° E., also all over inner bay of Passamaquoddy.
	On sand reef at E. entrance	1	F	Square; wood; white; keeper's dwelling attached; erected on frame piers 10 feet above high water.	40	10	
Mark Point	St. Croix River.	1	F	Square; white.	32	10	
Spruce Point	St. Croix River	1	F	Square; white.	32	10	

Mark Point	St. Croix River	1	F	Square; white; piers 10 feet above high water.	32	10	
Spruce Point	St. Croix River	1	F	Square; white	32	10	
Midjic Bluff	On bluff	1	F	Square; wood; white; lantern brown.	130	15	A fog-signal on Mascabin Point; blasts of 7 seconds, intervals of 30 seconds.
Lubec Narrows	Mulholland's Point, Campobello Island.	1	F	Octagonal; wood; white	60	13	
Head Harbor	E. Quoddy Head, N. point of Campobello Island.	1	F	Octagonal; white, with red cross; dwelling attached; iron lantern painted *red*.	64	13	Fog-signal: a trumpet; blasts of 8 seconds intervals of 35 seconds.
Pea Point	On Pea islet, E. side of entrance to l'Etang harbor.	1	F. green	Square; wood; white; dwelling attached.	51	10	
Bliss Island	W. point of island	1	F. red	Square; wood; white	45	12	
Drews Head (Drew Point)	On W. side of Beaver Harbor.	1	F	Square; wood; white	45	10	Visible from all points between eastern and western heads of harbor.
Lepreau	On point	1	F	Octagonal; vertical; red and white strips.	80	14	Fog-signal: A horn, blast of 5 seconds every ½ minute. In reserve a steam-whistle giving 2 blasts of 5 seconds' duration with an interval of 5 seconds between them, every minute.
Dipper Harbor	S. point of Campbell's Island.	1	F. red	Square; tower; white; red roof.	30	6	Visible between N. 8° W. and N. 64° W.
Musquash	E. side of entrance	1	F. green and white	Square; wood; white; dwelling attached.	112	10	Shows GREEN seaward WHITE over the harbor.
St. John Harbor	S. extreme of spit	1	F	Vertical black and white stripes.	35	10	
Negro Point	End of Government breakwater; W. entrance to port of St. John.	1	F. red	Hexagonal; open frame building; stone base; white, with red lantern.	40	8	
Partridge Point	St. John Harbor, inside of old ramparts, highest part of island.	1	F	Octagonal wooden tower; iron lantern painted *red*.	119	17	Fog-signal; a steam-whistle sounded every minute for 10 seconds.
Wilmot Bluff	St. John River	1	F	White; mast shed at base	104	10	
Oromocto Shoal		1	F	White; mast shed at base	54	10	
No Mans Friend		1	F	White; mast shed at base	55	10	

List of lights included in limits of this work—Continued.

NEW BRUNSWICK—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Jemseg	S. side of lower entrance	1	F. red	Mast; white shed at base; on pier.	34	3	Illuminates an arc of 180°.
Oak Point		1	F	White	50	10	
Williams Landing	Near end of wharf	1	F	Mast	30	10	To guide through Long Reach
Flewellings Landing	Kennebeccasis River, 20 feet from front of wharf.	1	F. red	Mast	25	5	Visible from S. 25° W. through east to N. 25° E.
Sand Point		1	F	White	50	10	
Palmers Landing	Outer end of public wharf	1	F	Mast; white shed at base	37	5	A guide through channel of Belle Isle Bay.
Green Head		1	F	White	105	10	
Cox Point	Grand Lake	1	F	White	20	10	
Belyeas Point	On point W. side of river	1	F	Square; wood; white	40	11	To clear Purdy's Shoal.
Robertson Point	Grand Lake	1	F	Square; wood; white	16	10	
McManns Point	Newcastle, Grand Lake	1	F	Square; wood; white	28	10	
Fanjoy Point	Grand Lake	1	F	Square; wood; white	16	10	
Hackerst Point	Salmon River	1	F	Square; white			Building.
Cape Spencer	Pitch of cape	1	Rev., every 3 minutes; red 45 seconds; eclipse 45 seconds; white 45 seconds; eclipse 45 seconds.	Square; white	207	20	Visible between S. 85° E. and N. 85° W.
Quaco or St. Martins	On pitch of cape. W. head	1	Rev., every 20 seconds.	Square; wood; white; dwelling attached.	110	16	Fog-signal, blasts of 9 seconds' duration every 30 seconds.
	On outer end of the eastern breakwater.	1	F. red	Squar wooden tower; white.	20	6	Visible between S. 86° 52′ W. and N. 65° W., and from N. 14° 22′ W. to N. 36° 15′ E.

Quaco or St. Martins	On pitch of cape, W. head	1	Rev., every 20 seconds.	Square; wood; white; dwelling attached.	110	16	Fog-signal, blasts of 9 seconds' duration every 30 seconds.
	On outer end of the eastern breakwater.	1	F. red	Squar wooden tower; white.	20	6	Visible between S. 86° 52′ W. and N. 65° W., and from N. 14° 22′ W. to N. 36° 15′ E.
Andersons Hollow	Eastern end of Government breakwater.	1	F. red	Square; white; red roof	25	6	
Cape Enragé	Pitch of cape	1	F	Square; white	120	15	Visible between N. 65° W. and N. 25° E. Fog-signal; a horn, blasts of 8 seconds duration, intervals of 20 seconds.
Griudstone	W. part of Island	1	F	Octagonal; wood; white	60	12	Visible between N. 36° E. and N. 81° E., over an arc of 315°. Fog-signal; a trumpet giving four blasts every minute.
Fort Folly Point	On point at junction of Petitcodiac and Memramcook Rivers.	1	F	Square wooden tower, surmounted by an iron lantern; keeper's dwelling attached; building white, lantern red.	77	14	
Hillsborough wharf	Petitcodiac (Petit Coudiac) River.	1	F	Open frame	14	5	
Wards Point	Northern side of entrance to Cumberland Basin.	1	F	Square; wooden; white	72	10	Visible between the bearings N. 45° E. and S. 28° W. through north.

NOVA SCOTIA.

Apple River, Chignecto Bay	Cape Capstan or Hetty Point, N. entrance.	1	F	Oblong, with tower; white	64	12	Fog-signal: A horn, blasts of 14 seconds, intervals of 46 seconds.
Advocate Harbor	S. side of channel at entrance.	1	F. red	Square; wood; white; on small crib; dwelling attached.	36	7	Fog-signal on Cape d'Or: a steam-whistle; blast of 6 seconds at intervals of 24 seconds.
Cape Sharp	S. extremity of cape	1	F. red	Square; wood; white; dwelling attached.	60	10	
Parsboro' or Partridge Island	W. side of river	1	F	Square; white; on dwelling	37	9	
Salters Head	On head, southern shore of the Basin of Mines.	1	F. red	Mast with small shed at its base.	60	5	Visible from all points of approach.
Spencer Point	N. shore Cobequid Bay	1	F	Window in a building	35	6	

List of lights included in limits of this work—Continued.

NOVA SCOTIA—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Burntcoat	Basin of Mines, NW. extremity of head.	1	F	Square; white; on dwelling.	75	13	Visible from all points of approach.
Walton Harbor	Basin of Mines, N. side of entrance.	1	F. red	Square; wood; white	60	10	
Windsor	At junction of Avon and St. Croix Rivers.	1	F				*To be erected.*
Horton	On bluff. W. side of Avon River, near its month.	1	F	Square; wood; white; dwelling attached.	100	15	
Kingsport	On Oak Point pier	1	F	Upper part inclosed and painted white; lower part open framework, brown.	30	8	Visible between S. 30° W. and N. 86° W.
Black Rock Point	S. shore	1	F	Square; white	45	12	
Isle Haute	Summit	1	Int. Visible 40 seconds every minute.	Square; wood; white; dwelling attached.	365	20	Almost hidden by trees.
Margaretville	On a point 4¾ miles E. of Port George.	1	F. red	Square; horizontal; white and black stripes.	30	8	Visible from S. 50° W. to N. 50° E.
Port George	Outer end of eastern pier	1	F. green	Square wooden building; white.	25	7	
Port Williams	S. shore	2	F. Vertical; 22 feet apart.	Square; white	92 70	10	Lower light visible between S. 50° W., N. 50° E.
Annapolis	Near water's edge, a short distance northeastward of the old Government pier.	1	F. red	Square wooden building; white.	30	7	
Shaffners Point	N. side Annapolis River	1	F	Square; wood; white	55	8	
Digby	SW. end of the freight shed on the pier at Digby.	1	F. red	Mast on inner end of freight shed.	38	6	Visible from N. 3° E. to S. 3° W.

	tance northeastward of the old Government pier.			white.			
Shaffners Point	N. side Annapolis River	1	F	Square; wood; white	55	8	
Digby	SW. end of the freight shed on the pier at Digby.	1	F. red	Mast on inner end of freight shed.	38	6	Visible from N. 3° E. to S. 3° W.
Point Prim, or Digby Gut	S. point of entrance to Annapolis basin.	1	F	Square; vertical red and white stripes.	76	13	Fog-signals: A steam-whistle, sounded 8 seconds in each minute.
Boars Head	N. entrance to Petit Passage, 51 feet from edge of cliff.	1	Alt. every minute	Square; white	70	14	Visible between N. 84° E. and S. 39° W.
Brier Island	NW. point	1	F	Octagonal; white	92	13	Fog-signal: A steam-whistle sounded 3 times in each minute.
Westport	Peter Island, entrance to Grand Passage.	2	F. horizontal, 24 feet apart.	Square; white	40 each.	10	Visible between S. 6° E. and S. 5° W., and between N. 39° E. and N. 43° W.
Sissiboo	S. side of entrance to river	1	F	Square; wood; white	36	8	
Belliveau Cove	End of E. pier	1	F. green	Square; wood; white	24	4	
Church Point	E. side of bay	1	F. red	Square; wood; white	36	10	To mark Church Point and dangers in the vicinity.
Metegban River	End of breakwater	1	F. green	Vertical red stripes to seaward; lantern black.	23	16	To guide into the river, should be left on starboard hand and close-to.
Cape St. Mary	E. side of bay	1	Alt. every ½ minute	Octogonal; white	103	17	
Green Cove or Maitland	Outer end of westerly breakwater.	1	F. red	Mast with white shed at base	33	7	Lighted from April 15 to November 15. Bell-buoy off Trinity rock.
Bunker Island	End of reef, off SW. point, E. side of entrance to Yarmouth Harbor.	1	F. red	On dwelling; built on wooden pier.	27	10	Visible between N. 10° W. and N. 16° E.; also over Stanwoods beach from S. 23° E. to S. 68° E. Fog-signal: A bell sounded at intervals of 15 seconds.
Yarmouth or Cape Fourchu	E. cape, S. point	1	Int. every 1¾ minutes, eclipse ½ minute.	Octagonal; vertical red and white stripes.	117	18	Fog-signal: A whistle sounded 10 seconds every minute.
Pease Island	S. point	2	Rev., red and white, every minute. F. red.	Square; wood; white; dwelling attached.	56 40	12 4	Visible from the southward, and through the Schooner and Ellenwood Passages. Fixed red light marks the channel between Old Man and Old Woman Rocks.

List of lights included in limits of this work—Continued.

NOVA SCOTIA—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Seal Island	S. point, ⅓ of a mile inland	1	F	Octagonal; white	98	18	Fog-signal: A steam-whistle-blasts of 5 seconds, at intervals of 5 seconds and 45 seconds, alternately.
Tusket River	Big Fish Island, SW. point	2	F. horizontal, 24 feet apart.	Square; wood; white; from each end of dwelling.	50	12	Visible seaward.
Whitehead	S. point of Whitehead Island, near Argyle Harbor.	1	F. red	Square; wood; white; dwelling attached.	115	12	
Abbot Harbor	S. end of Abbott Island	1	F	On a mast	40	8	Lighted from April 1 to October 1.
Pubnico Harbor	Beach Point, E. side of entrance, 360 feet from low-water mark.	1	F	Square; white	41	11	Open westward of St. Johns Island, bearing N. 17° E., clears the ledge.
Bon Portage Island	S. point	1	Rev. red, every minute.	Square; wood; white	46	12	
Stoddart Island	Northwest point	1	F. red	Square; white	22	9	
West Head	On western side of Cape Sable Island.	1	F.	Square; wood; white	42	11	Illuminates entire horizon.
Cape Sable	On Cape	1	Rev. every 40 seconds; eclipse 25 seconds.	Octagonal; white	53	12	Fog-signal: A steam-whistle; blasts of 10 seconds every minute.
Barrington, East Bay	Light-vessel, in 6 fathoms, off Wesses ledge.	1	F.	Light-vessel, schooner-rigged; hull and spars red; "Barrington" in white letters on both sides.			A bell-buoy painted red, black horizontal stripes, has been moored in 19 fathoms of water south of Brazil Shoal.
Baccaro	E. side entrance to Barrington Bay.	1	F. red	Square; white, with black ball seaward.	49	10	Whistling-buoy, red, is moored ¼ mile S. 27° W. from Bantam Rocks.
Port Latour	E. end of Pages Island	1	Fl	Square; white; lantern red	46	12	

			letters on both sides.				fathoms of water south of Brazil Shoal.
Baccaro	E. side entrance to Barrington Bay.	1	F. red	Square; white, with black ball seaward.	49	10	Whistling-buoy, red, is moored ½ mile S. 27° W. from Bantam Rocks.
Port Latour	E. end of Pages Island	1	Fl	Square; white; lantern red	46	12	
Negro Island	N. side	1	Alt. every minute	Octagonal; wood; white; iron lantern painted red; tower is attached to E. end of keeper's dwelling.	60	13	
Sand Spit	On pier, E. side of entrance to Shelburne Harbor.	1	F. red	Square; wood; white	47	10	
Cape Roseway	Near SE. extreme of Macnutt Island, Shelburne Harbor.	2	F. vertical, 55 feet apart.	Octagonal; vertical black and white stripes.	120 65	18 10	Fog-signal: A horn; blasts of 10 seconds' duration every two minutes.
Rugged Island Harbor	Gull Rock	1	F	Square; white	56	10	Whistling buoy, 3⅜ miles S. 60° 30′ E from the Gull Rock light-house.
	On Carters Island	1	F. red	Square; wood; white	66	11	
Port Herbert	On Shingle Point, E. side of harbor.	1	F. red	do	33	10	
Little Hope	Nearly on center of Island	1	Rev. every 50 secs.; eclipse 30 seconds.	Square; white; center of keeper's dwelling.	43	12	
Port Mouton	NE. point of Spectacle Island	1	F. red	Square; wood	47	11	For guiding vessels into harbor.
Fort Point	S. entrance, Liverpool Bay	1	F. red	Square; white	30	7	To be left on the port side when entering harbor.
Brooklyn Pier	Near outer end of pier, 220 feet from shore.	1	F. green	Pole	30	4	
Coffin Island	S. point, Liverpool Bay	1	Rev. every 2 minutes; eclipse 30 secs.	Octagonal base; horizontal stripes, red and white, eight in number.	85	16	
Port Metway	Medway Head, W. side of entrance.	1	F	Square; white; with black square seaward.	44	10	
Mosher Island	On island, W. side of entrance to La Have River.	1	F. red	Square; white	55	8	
La Have	On Fort Point	1	F. red	Square; wood; white	48	8	A bell-buoy is moored off the La Have River in 22 fathoms, 3 miles S. 32° E. from Moser Island light and 2¾ miles S. 2° W. from West Ironbound light.
West Ironbound Island	Near Cape La Have; mouth of La Have River.	1	Rev. every 30 seconds	Square; white	72	13	Near the edge of a cliff 40 feet high.

List of lights included in limits of this work—Continued.

NOVA SCOTIA—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Battery Point	Entrance to Lunenberg	1	F. red	Square; white; on keeper's dwelling.	50	11	
Cross Island	E. Point, Lunenburg Bay	2	Upper Lt. every min.; eclipse 15 secs. Lower F.	Octagonal base; red	100 65	14 6	Pilots here; vessels may take refuge in case of necessity. Fog-signal: A horn giving blasts of 10 seconds, every 1½ minutes.
Hobsons Nose	Mahone Bay	1	F. red	Square; wood; white	68	11	
Quaker Island	Off Chester	1	F. red	Square; wood; white; dwelling attached.	109	11	
Westhaver Island	Mahone Harbor entrance	1	F	Square; wood; white; dwelling attached.	59	13	A temporary light shown. It consists of a small dioptric lantern hoisted on a mast.
East Ironbound Island	Little to eastward of center of island, Mahone Bay.	1	F	Oblong; wood; white; on dwelling.	150	16	Lantern only visible, dwelling hidden by trees.
Green Island	On S. point of island, St. Margarets Bay.	1	Fl. red and white alternately, every 1½ minutes; red 52 sec.; eclipse 38 sec.; white 52 sec.; eclipse 38 sec.	Square; wood; white	66	W. 13 R. 8.	As the distance from the light increases the length of time the flash is visible decreases.
Hubbard Cove	On Green Point, W. side of entrance.	1	F. red	Square; wood; white; dwelling attached.	60	11	
Croucher Island	St. Margarets Bay	1	F	Square; wood; white	90	1	
Peggy Point	E. side of entrance to St. Margarets Bay.	1	F. red	Square; white	65	14	
Betty Island	On Brig Point, near Prospect.	1	Rev. red, every 2 minutes.	Square; wood; white; two horizontal red bands; dwelling attached.	75	14	

Peggy Point	E. side of entrance to St. Margarets Bay.	1	F. red	Square; white	65	14	
Betty Island	On Brig Point, near Prospect.	1	Rev. red, every 2 minutes.	Square; wood; white; two horizontal red bands; dwelling attached.	75	14	
Terence Bay	On Shipley Head near Terence Point.	1	F. red	Mast; white shed at base	55	7	
Sambro	Center of island	1	F	Octagonal; white	115	20	Fog-signal: Explosive, single report every 20 minutes.
Chebucto Head	W. side entrance to Halifax	1	Rev. every minute	Square; wood; white	132	18	
Herring Cove	Western head	1	F. red	Mast; white shed at base	52	8	Harbor light.
Maugher Beach	Sherbrook tower, east side of entrance to Halifax.	1	F	White; granite; roof red	58	12	Fog-signal: A horn, which sounds blasts of 5 seconds duration, with intervals of 25 seconds between the blasts.
George Island	W. side of island, Halifax harbor.	2	F., vertical, 20 feet apart.	Square; wood; drab; lantern block.	50 30		On the west side of the island only the upper light can be seen to guide vessels into and out of Halifax by channel west of Georges Island. Fog-signal: A bell sounds 7 strokes every minute at equal intervals.
Devil Island	S. point of island	2	F., N. 60° E. and S. 60° W.	Octagonal; wood; white	E. 59 W. 52	13 13	
Jedore Rock	On rock	1	F. red	Square; wood; white; dwelling attached.	86	12	
Egg Island	Center of island	1	Rev. every minute, with three flashes at intervals of 15 seconds; eclipse 30 seconds.	Octagonal; wood; black and white vertical stripes on seaward side.	80	15	
Pope Harbor	West point of Harbor Island.	1	F. red	Square; wood; white; dwelling attached.	45	9	
Sheet Harbor Passage	East entrance	1	F. red	Dormer window of rectangular wooden dwelling painted white.	42	5	Visible between the bearings N. 21° 30′ W. and N. 1° 49′ W.
Sheet Rock	Entrance to Sheet Harbor	1	Rev. red, every 40 seconds.	Square; wood; white dwelling attached.	75	10	Visible between N. 75° W. and N. 43° E. over an arc of 118°.
Beaver Point	Eastern end of point	1	F. red	Mast; shed painted white	40	6	
Beaver Island	SE. part of E. Beaver or William Island.	1	Rev. every 45 seconds.	White, with two black balls seaward, SSW., on house.	70	12	

List of lights included in limits of this work—Continued.

NOVA SCOTIA—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible, in nautical miles.	Remarks.
Liscomb Island	West end	1	Alt. every 2 minutes.	Square; wood; white	64	15	
Wedge Island	Mouth of St. Mary River	1	Rev. red every 3 minutes; flash 1 minute.	Square; wood; white; dwelling attached.	81	12	
Green Island	On south point of Green Island.	1	F.	Square; wood; white	51	12	Red whistling buoy 3¾ miles south of.
Isaac Harbor	W. side of harbor, ¼ mile S. from Holly Point.	2	F. vertical, 20 feet apart	Square; wood; white; dwelling attached.	80	9	
Berryhead	Eastern point of Berryhead, W. side entrance to Torbay.	1	F. red and white	Wood; white, with vertical red stripes; lantern top black.	51	10	Shows red to seaward and white to northward into bay and towards Molasses Harbor.
Whitehead Island	SW. extremity	1	Rev. every 20 seconds	Pyramidal; white; octagonal lantern.	55	11	Light not totally obscured during eclipse.
Three Top Island	SE. point of island, entrance to Whitehaven.	1	F.	Square; wood; white; dwelling attached.	48	11	Obscured by the high land of Whitehead Island and to the eastward of N. 34° E.
Sable Island	On W. end of island	1	Rev. every 3 minutes	Octagonal; wood; white	118	17	
	1½ miles from E. end	1	F.	Octagonal; painted alternately white and brown	128	18	
Cranberry Island	N. part of island, off Cape Canso	2	F. vertical, 35 feet apart	Octagonal, red and white horizontal bands.	89 54	15 12	Upper light visible around horizon; lower light not visible to vessels passing between it and the coast. Fog signal: a steam-whistle sounded 8 seconds every minute.
Canso Harbor	On Hart or Cutler Island	1	F. red	Square, wood; white	42	12	
Crow Harbor	On Rook Island	1	F	do	50	12	*Harbor light.*
Guysborough Harbor	W. side of entrance, near Peart Point.	1	F	do	30	8	

Canso Harbor	On Hart or Cutler Island	1	F. red	Square, wood; white	42	12	every minute.
Crow Harbor	On Rook Island	1	F	do	50	12	*Harbor light.*
Guysborough Harbor	W. side of entrance, near Peart Point.	1	F	do	30	8	
Sand Point	On Eddy Point, S. entrance	2	F. horizontal, 24 feet apart.	Square; wood; white, with a black diamond.	25 each.	8	Lights in windows at each end of building.
Tupper Point	Ship Harbor or Port Hawkesbury.	1	F. red	Square; white	44	7	Visible from N. entrance of Gut of Canso, and from S. about 3 miles.
North Canso	N. entrance, W. side, 120 yards inshore.	1	F	Square; wood; white	110	18	
Havre Bouche	SW. part of harbor	2	F. and F. red	do	36 / 107	9	In line lead through dredged channel over the bar.
Pomquet Island or Bayfield	NE. end of island, in St. Georges Bay.	1	F. red.	Square; white	50	9	Obscured on easterly bearing.
Cape St. George	N. side of cape	1	Rev. every ½ minute	do	350	25	
Merigomish Harbor	On King Head, entrance to harbor.	1	F. red	Square; wood; white	105	10	
Pictou Island	SE. point	1	F	Square; white	52	12	
Pictou Harbor	S. point of entrance	2	F. and F. red	Octagonal; wood; red and white vertical stripes.	65 / 40	11	Small red light; kept S. 45° W. clears the E. reefs off Pictou Islands.
	New custom-house	1	F	Tower of new custom-house.	60	8	In range with harbor light leads up through the channel to the bar.
	Frasers farm, N. side of entrance.	2	F. red	Masts	56 / 75	1	Leading lights from intersection with Pictou Bar and Custom-House Range to where Pictou Bar light bears nearly abeam, whence a course S. 61° W. will lead to safe anchorage in the harbor.
Caribou Island	NE. part (Gull Island)	1	Rev. every minute	Square; white	35	10	
Amet Island	Center of Island, Northumberland Straits.	1	F	Square; wood; white	44	10	
Mullins Point	N. side of entrance to Wallace Harbor.	2	F / F. red	Square; wood; white / Window of dwelling	39	11	In line lead across bar and up channel.

List of lights included in limits of this work—Continued.

NOVA SCOTIA—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Pugwash	In harbor (Fishing Point)	1	F., with red sector	Square; white	48	8	Shows red seaward and white toward harbor.
Cold Spring Head	About 100 feet from the shore on N. side of the head, southern shore of Bay Verte.	1	F	Square tower; white, surmounted by an iron lantern; red.	60	13	
CAPE BRETON ISLAND.							
Creighton Head	N. extremity	1	Rev. every 40 seconds.	Square, wood; white	29	10	
Jerseyman Island	Arichat Harbor	1	F. red	do	39	11	
Arichat	Marache Point	1	F	do	34	8	
Petitdegrat	On Big Arrow Islet. East entrance Petitdegrat Inlet.	1	F. red	Square; wood; white; dwelling attached.	38	10	
Glasgow Point	Lennox Passage	1	F. red	Mast; white shed at base		5	
Seal or Dog Island	do	1	F. red	do		5	
Grandigue	On beach near wharf; Lennox Passage.	1	F. red	do	30	5	
Onetique Island	S. point	1	F. red	Square; wood; white; dwelling attached.	78	9	A guide through Lennox Passage.
Jerome Point	St. Peters Bay, near entrance to canal.	1	F. red	do	56	10	To lead up the bay to canal.
Cape Round	W. side of entrance to St. Peters Bay.	1	F.	do	92	14	
Green Island	Summit of island	1	Alt. every 45 seconds.	Square; wood; white; center of keeper's dwelling.	70	14	

Cape Round	W. side of entrance to St. Peters Bay.	1	F.	....do	92	14	
Green Island	Summit of island	1	Alt. every 45 seconds.	Square; wood; white; center of keeper's dwelling.	70	14	

NEW BRUNSWICK.

Jourimain Island	E. end of island, on Light-House Point.	1	Fl. every 10 seconds	Octagonal, white; dwelling, white.	72	14	Visible between S. 75° E. and N. 26° W.
Shediac	Shediac Island beacons	2	F	White	48 56	10	
	Du Chêne Wharf	2	F	On iron masts with sheds at the base.	32 38	6	
Cassiés Point	Northumberland Strait	1	Rev. every ¼ minute	Square; wood; white	47	14	
Buctouche Harbor	Church or Indian Point	2	F	Square; wood; white; red roof.	23	9 12	Lights in line N. 48° W. lead into harbor clear of all obstructions.
	3 miles N. of Dixon Point, S. side of harbor.	2	F	Square; wood; white	36 41	11 12	To guide into Buctouche Harbor, in line N. 79° W.
Richibucto	On head	1	F	Square; white	50	14	
Richibucto Harbor	South beach	2	F., F. red	Square; wood; white; dwelling attached. Square, open frame; white.	40 44	12 12	Lights in line S. 51° W. lead over the bar.

PRINCE EDWARD ISLAND.

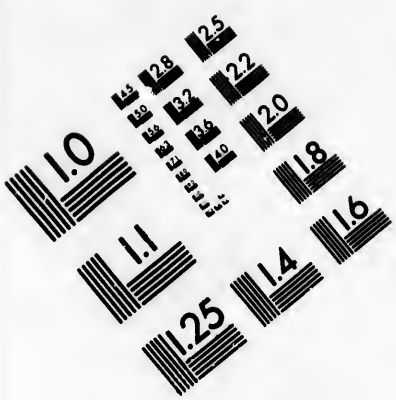
East Point	200 feet from extreme point	1	Rev. every 3 minutes.	Octagonal; wood; white	100	15	Visible between S. 54° E. and N. 5° E. Fog-signal; gives blasts of 8 seconds every 30 seconds.
Souris East	Knights Point, 300 feet S. 71° E. of breakwater.	1	F	Square; wood; white; dwelling attached.	85	15	
Souris East	Outer end of the breakwater pier	1	F. red	Mast, with square flat-roofed shed at base, the whole painted white.	45	8	Enables vessels seeking shelter to accurately locate the outer end of the breakwater. The light is liable to be extinguished by heavy weather.

List of lights included in limits of this work—Continued.

PRINCE EDWARD ISLAND—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible, in nautical miles.	Remarks.
Cardigan River	W. side of river	1	F., with green sector	Square; wood; white	43	8	Light shows green to seaward and white across river to northeastward. When white light is opened safe anchorage has been reached.
Panmure Head	SE. extremity of Cardigan Bay.	1	F	Octagonal; wood; white	96	16	
Georgetown	St. Andrews Point	2	F. red and F., N. 87° W. and S. 87° E.	Square; wood; white	{36 {50	10 12	In line lead in to the point.
Cape Bear	On the headland	1	Rev. red, every ½ minute.	Square; wood; white; dwelling attached.	74	12	
Murray Harbor	On sandbar and on shore	2	F	Square; wood; white	{33 {57	8 10	In line N. 54° E. lead in.
Wood Island	Off S. point	1	F	Square; wood; white; dwelling attached.	80	15	
Hillsborough Bay	Prim Point, 300 feet from the point, SE. part of bay.	1	F	Circular; brick; white	68	12	
	S. side of St. Peter Island	1	F. red	Square; wood; white	70	10	Visible over an arc of 242° between S. 62° W. and S. 56° E.
Charlottetown Harbor	Brush Wharf	1	F. red	Square; wood; white	28	8	
	On Hazzard Point, east side of entrance to Charlottetown Harbor.	2	F. red	Square wooden buildings, painted white.	{45 {125	8 12	In line N. 19° 30′ E. lead in.
	Brighton Beach, east side of North River.	2	F. red	Masts, surmounted by diamond-shaped cage; shed at foot; all painted white.	{ {72	7 9	Illuminate a small arc on each side of their alignment N. 23° W.
	Blockhouse Point, W side of entrance.	1	F.	Square; wood; white; dwelling and signal-staff attached.	{56 {35	W. 12 R. 3	

Charlottetown Harbor	Brighton Beach, east side of North River.	2	F. red	Masts, surmounted by diamond-shaped cage; shed at foot; all painted white.	{ 72	77 91	Illuminate a small arc on each side of their alignment N. 23° W.
	Blockhouse Point, W side of entrance.	1	F.	Square; wood; white; dwelling and signal-staff attached.	{ 56 35	W. 12½ R. 3½	



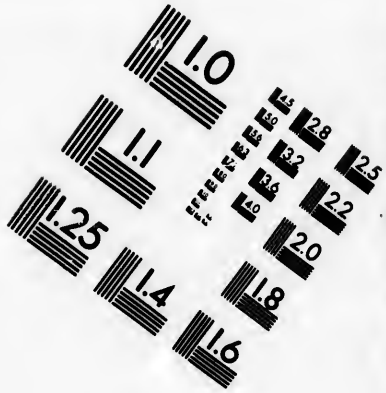
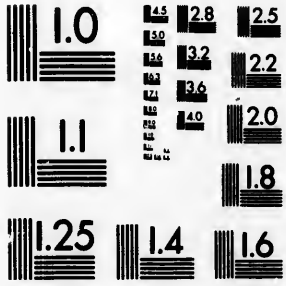
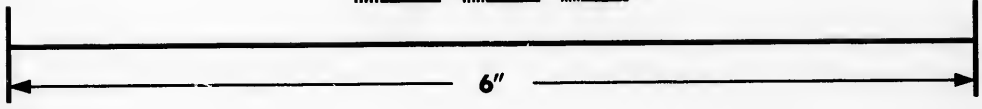
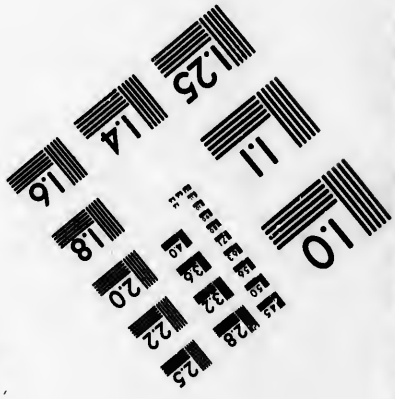


IMAGE EVALUATION
TEST TARGET (MT-3)







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Crapaud	W. end of bridge in harbor	2	F	Square; wood; white; window of a house.	41 60	6	In line N. 19° W. Diamond-shaped day-marks.
Salutation or Sea Cow Head	On head	1	F	Octagonal; wood; white	88	15	
Indian Point (head)	Extreme N. point of spit, S. side of channel.	1	F., with green sector	Octagonal; wood; white; on a circular stone pier.	48	13	Green over Miscouche Shoals and white in the harbor, and from Sea Cow Head to the S. point of Miscouche Shoal.
Summerside	Railway Wharf	1	F	Square	23	10	
Cape Egmont	On point	1	F. red	Square; wood; white; dwelling attached.	72	10	
West Point	On sand beach	1	Rev., red and white. 1 red and 3 white flashes in 1½ minutes.	Square; wood; red and white horizontal bands.	66	13	
Big Miminegash	On sand hill, about 500 feet S. of breakwater.	1	F., with red sector	Mast; white shed at base	30	5	Line S. 19° E., lead in.
	Rix Point	1	F		45	8	
North Point	On point	1	Rev. every minute	Octagonal; white	80	14	
Big Tignish	Onter end of N. breakwater	1	F. red	Mast	18	5	For fishing boats and small craft.
	Inner end of N. breakwater	1	F	Square; wood; white; horizontal black band.	35	11	In line N. 73° W., lead in between the breakwaters.
Cascumpeque (Alberton)	Sandy Island, S.W. part	1	F	Square; wood; white; dwelling attached.	45	12	
	Near inner end of railway wharf.	1	F. red	On a mast	22	9	Range lights. Do not lead in deepest water.
	¼ mile S. 66° W. from preceding.	1	F. red	Open frame; surmounted by a mast.	40	11	
Little Channel	Conway Inlet, N. side of entrance.	2	F	Square; wood; white Open framework; lantern white.	26 16	10 8	In line lead in. Outer light liable to be moved.
Darnley Point Range	Front light about 1,300 yards eastward from Cape Aylesbury.	2	F. red	Mast; white shed at base	40 65	7	In line S. 33° W., lead to the black buoy at the eastern passage over the bar.

List of lights included in limits of this work—Continued.

PRINCE EDWARD ISLAND—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Fish Island	Entrance to Malpeque Harbor, Richmond Bay.	2	F	Square; wood; white; dwelling attached. Open framework; lantern white.	50 18	12 6	In line lead over bar. Outer light liable to be moved.
New London	Grenville Harbor W. side of entrance.	2	F. red and F	Square; wood; white; dwelling attached. Square; white; open frame.	45 24	17 3	Liable to be moved.
Grand Rustico	W. side of entrance	2	F. and F. red	Square; wood; white; dwelling attached. Mast	40 22	8 5	In range S. 49° W lead to a black can buoy outside the bar in 13 feet of water.
Cove Head	Black Point of Cove Head Bay.	1	F	On masts	33 23	3	Range lights. Front or outer light green.
	On the beach, W. side of entrance to Cove Head Bay.	1	F. green				
Tracadie Harbor	W. side of channel	2	F. red	Square; open frame; lanterns white.	30 19	10 9	In line lead in.
Savage Harbor	At entrance	2	F	On masts: brown sheds at bases.	22 30	5	Lights in line S. 29° E., lead to mid-channel buoy outside the bar. Outer light liable to be moved.
St. Peters Harbor	W. side channel	2	F	Square: wood; white Square; white; open frame.	34 32	6	These lights no longer range with the best channel over the bar.

(804.) **CANADA.—River St. Lawrence.—North shore.—Leading lights at Bersimis river entrance.**—August 24, 1891, two leading lights were established at the mouth of the Bersimis river, north shore of the river St. Lawrence.

Bersimis River lights are *fixed white* lights shown from reflector lanterns hoisted on masts, situated on a tongue of sand running out westwardly from the Hudson Bay Company's post on the north side of the mouth of the river. They should be visible, in clear weather, from a distance of 5 miles over a small arc on each side of their alignment. The outer (front) range mast is located on the shore line near high-water mark. The mast is 20 feet high and has attached to it a diamond-shaped slatted beacon, 10 feet square, facing the channel, to make it more conspicuous as a day mark. The whole is painted white.

The light is shown at an elevation of 30 feet above high water.

Position: Latitude, 48° 56′ 10″ N.; Longitude, 68° 38′ 28″ W.

The rear range mast, 30 feet high, is 360 feet N. 65° W. *true*, (NW. ⅜ N. *mag.*), from the front one, and similar to it.

The light is shown at an elevation of 40 feet above high water.

This range is intended to show the best water into the river, over the sand bar, which extends over a mile outside Bersimis point, and carries a least depth of 4 feet at low water.

Buoys also mark the channel from deep water to Bersimis point, as follows:

A black can buoy on the west side of the entrance outside the bar.

A black can buoy on the end of the spit running nearest to the channel on the west side.

A black spar buoy on the end of the spit nearest the channel on the

shoal, west side.

A *fixed red* light from a buoy moored on the northwest edge of Le Gros Loup. This light buoy replaces the one which disappeared in May, 1891.

(See Notice to Mariners, No. 9 (158) of 1891.)

north coast of Prince Edward island, have been moved from their former positions and are now situated as follows:

The front light is shown from a lighthouse situated on the outer end of the breakwater on the northwest side of entrance to the harbor.

The light is, as formerly, *fixed white*, catoptric, and elevated 24 feet above high water.

The upper part of the wooden tower is inclosed and painted white; the open posts and framework below are brown.

Position: Latitude, 46° 31′ 10″ N.; Longitude, 63° 28′ 52″ W.

The rear light, *fixed red*, catoptric, is elevated 45 feet above high water, and shown from a wooden tower, with dwelling attached, standing upon a cribwork foundation situated on the beach, about 1,500 feet S. 21° W. *true*, (SW. *mag.*), from the front light. The tower and dwelling are painted white, the lantern brown.

The lights should be visible, in clear weather, from a distance of 7 miles seaward over an arc of about 110° between Sims point on the west and the sand hills on the east side of the harbor. The lights in line S. 21° W. *true*, (SW. *mag.*), lead in the best water over the bar at entrance to the harbor, but the rear light must be opened to the eastward of the front one when abreast Sims point, to clear the rocky shoal off that point.

NOTE.—Strangers should not attempt to enter the harbor without a pilot at night, and the lead is required, especially off Sims point, at all times.

(*Notice to Mariners, No. 52, Ottawa, 1891.*) (N. M. 40, 1891.)

HYDROGRAPHIC OFFICE CHARTS.

(805.) Nos. 1013 and 1036. Light-List, Vol. I, No. 294, page 56.

(805.) **GULF OF ST. LAWRENCE.—Prince Edward island.—North coast.—Grenville harbor.—Change in position of New London range lights.**—The range lights at New London, Grenville harbor,

Coaling and Repairing Facilities.

Name of port.	Date.	Kind of coal.	Cost per ton.	Manner of coaling.	Next nearest coaling port.	Number and size of dry docks.	Machine shops at which steamers can repair.
Portland, Me	Sept., 1884	Anthracite, Pa ... Cumberland, Md. Clearfield, Pa. Kanawha, W. Va. Nova Scotia.	$3.75 to $4.75		St. John, New Brunswick; Portsmouth, N. H.	Two: 425 by 47 by 23 wood; 175 by 40 by 16, wood.	One, where engines are built.
St. Stephen, New Brunswick.	Aug., 1883	Anthracite	$6, delivered	By lighters; slow; ice in winter	Calais, Me; St. John, N. B.	None for large vessels.	None.
St. John, New Brunswick.	Sept., 1883	Bituminous ..... Anthracite	$6.00 ..... Stowing, $1 per ton.	By lighters; slow; no interruption.	Eastport, Me	None	One.
Windsor, Nova Scotia	Aug., 1884	Bituminous ..... Anthracite.	$4.00 to $6.50	14 feet draft, at wharf, by tubs. By lighters 8 miles below, at all times.	Parrsboro	None	One at Windsor, one at Hantsport, 7 miles below.
Port Joggins, Nova Scotia.	Aug., 1884	Joggins	$2.50	150 tons per day. No interruption.	Dorchester, New Brunswick.	None	Yes.
Parrsboro, Nova Scotia.	Aug., 1884	Parrsboro	$3.25 ..... Delivered at wharf.	By lighters at West Bay. Liable to interruption in January, February, and March by ice.	Pictou	None	None.
Annapolis, Nova Scotia	Aug., 1884	Anthracite ..... Bituminous.	$3.75 to $4.50, delivery and stowing, 60 cents per ton.	Lighters and carts; 100 tons per day. Most liable to possible interruption in January.	St. John	None	Yes.
Digby, Nova Scotia	Aug., 1884	None	$4.50	20 feet draft at pier, from one-half tide to high water.	Joggins	None	None at present.
Yarmouth, Nova Scotia.	Aug., 1884	Soft anthracite	$4.50	At wharf. Safe from storms.	Halifax, St. John	None	Nearly any kind of repairs done well.
Halifax, Nova Scotia	Aug., 1887	Nova Scotia ..... American anthracite. Patent fuel.	$4.00 to $7.00.	By lighters; slow; no interruption.	Pictou	1 marine railway 3,000 tons. One granite dry dock 601 by 89½ by 30.	Several. Naval station.

COALING AND REPAIRING FACILITIES—Continued.

Name of port.	Date.	Kind of coal.	Cost per ton.	Manner of coaling.	Next nearest coaling port.	Number and size of dry docks.	Machine shops at which steamers can repair.
Cape Canso, Nova Scotia.	Nov., 1883	Pictou	$3 to $4.		Louisburg, Halifax.	None	
Arichat, Madame Island.	Nov., 1883	None			Louisburg	None	
Port Mulgrave, Nova Scotia.	Nov., 1883	Bituminous			Pictou	None	
Port Hawkesbury, Cape Breton Island.	Nov., 1883	None			do	Marine railway, 1,000 tons.	
North Sydney, Cape Breton.	Aug., 1883	Sydney	$2.25. Free on board. Stowing, 6 to 10 cents per ton.	From loading pier, 1,000 tons per day. Interrupted from February to May.	Sydney proper, 5 miles.	None. Marine railway, 1,000 tons register capacity.	At Sydney mines, small one in town.
Sydney, Cape Breton	July, 1884	do	$2. Free on board.	Coaling piers, chutes, and drops, 500 tons per day. No interruption, except by ice, from January to May.	North Sydney	None	None.
Cow Bay, Cape Breton.	June, 1883	Bituminous	$1.75. Free on board. At wharf. Stowing, 15 cents per ton.	From wharf, 400 tons per day. From May to January.	Sydney, Louisburg	None	At mines.
Louisburg, Cape Breton		do	$2.45. Stowed.	By chutes. Rapid. Vessels can lie alongside in any weather.	Sydney in summer. Halifax in winter.	None	No regular facilities.
Pictou, Nova Scotia	Nov., 1883	do	$2.50 best screened, on wharf.	By chutes from elevated railways; rapid. Safe harbor for vessels up to 23 feet draft. Closed during winter months by ice.	Sydney	None; two marine railways; capacity 1,000 and 1,200 tons register.	Iron foundry and machine shops. A steam forge, engine and boiler works, 7 miles distant, connected by Intercolonial Railroad and by water.
Charlottetown, Prince Edward Island.	July, 1884	Pictou. Cape Breton. Anthracite.		Frozen up in winter	Pictou	None	Yes.

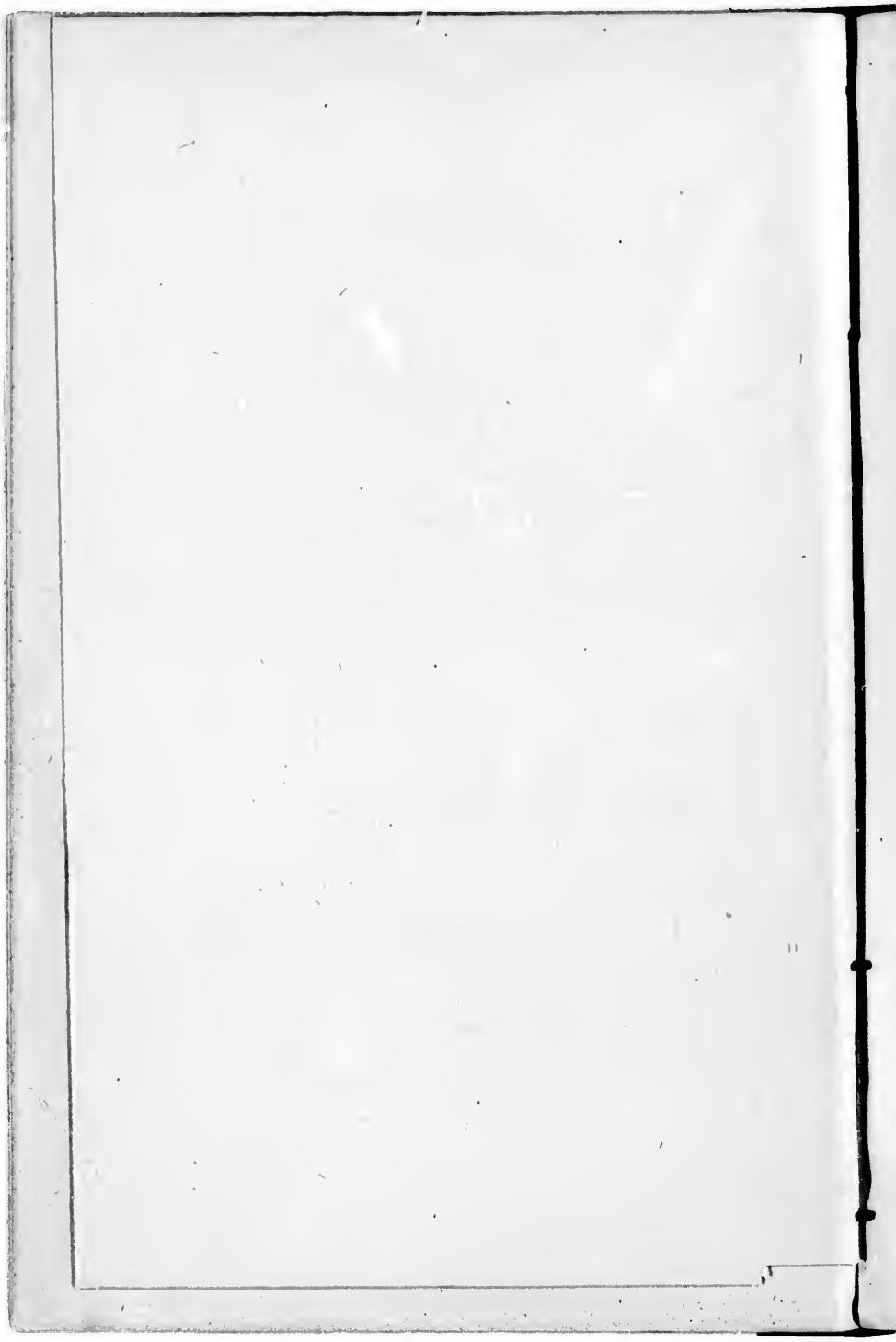
				Closed during winter months by ice.		tons register.	and boiler works, 7 miles distant, connected by Intercolonial Railroad and by water.
Charlottetown, Prince Edward Island.	July, 1884	Pictou ..... Cape Breton. Anthracite.	.....	Frozen up in winter.....	Pictou	None	Yes.

Summerside, Prince Edward Island.	Aug., 1883	Pictou ..... Sydney	$3..... 3.50..... Stowing, $1 per ton.	Hauled in cars to wharf, then on board in tubs or baskets; harbor frozen up from November till April.	Pictou, Nova Scotia.	None	None on island.
St. Johns Newfoundland.	Aug., 1883	Nova Scotia ..... Cardiff. Anthracite (American).	$4.50 to $8.50, delivered.	By lighters or from loaded vessels alongside; seldom interrupted; ice in February and March.	Harbor Grace	One sectional, capacity 500 tons; one dry dock, 610 by 84½ by 25.	Two working, in a small way. Large works building, with dry dock.
St. Pierre, Miquelon Islands.	.....	Anthracite ..... Sydney.	$5 to $8	By lighters in summer; no supply on hand in winter.	Cape Breton	None	None.
Amherst, Magdelen Island.	July, 1884	Bituminous.....	.....	.....	.....	None	
Newcastle (Miramichi River), New Brunswick.	.....	Bituminous.....	$4 to $5. Delivery and stowing, 40c. per ton.	By lighters from sheds; slow; not liable to interruption.	Pictou, Nova Scotia.	None	None.
Gaspé Basin, Quebec...	July, 1884	Pictou (bituminous).	Moderate	.....	.....	.....	
Quebec, Quebec.....	Sept., 1883	Sydney ..... Pictou. English. Welsh. Scotch. Welsh (anthracite). American (anthracite).	$3.25 to $6. Stowing, 50c. per ton.	By lighters, 400 to 500 daily; liable to interruption for short time late in fall.	Pictou, Nova Scotia.	One stone dry dock 500 by 62; 7 floating docks 140 to 240 feet in length, capable of taking vessels 25 per ct. longer.	Several in city; very large works at Point Levi, opposite Quebec.
Montreal, Quebec	Mar., 1888	English..... Scotch. Welsh. Nova Scotia. American (anthracite, bituminous.)	Soft, $3.20 to $4.25; hard, $4.; delivery and stowing, 75c.	Depends on size of vessels; facilities excellent; no interruption during the season of navigation.	Quebec (for large quantities).	Two dry docks; the largest and only one really available for sea-going vessels is 300 by 45 by 10.	Two connected with dry docks, and numerous smaller ones along river front.

Place.	Harbor frozen over.	Disappearance of harbor ice.	Arrival of field ice.	Disappearance of field ice.	Departure of last vess fore ice season.
Port Hawkesbury, Cape Breton	Feb. 3, 1886	Apr. 23, 1886	Feb. 3, 1886	Feb. 23, 1886.	Dec. 22, 1885
Louisburg Harbor (N.E. arm), Cape Breton	Jan. 15	Breaks up with southerly wind.	About Mar. 17	About Apr. 30	Feb. 20
Cow Bay, Cape Breton	Rarely freezes; three times in last 23 years.	None, except in docks	Feb. 15 to 28	Varies; about May 1	About Feb. 1
Sydney, Cape Breton	Jan. 14, 1886	Apr. 20, 1886	Generally in Jan	With westerly winds	Jan. 5, 1886
Port Hood, Cape Breton	Jan. 15 to Feb. 1	Apr. 15 to May 1	Jan. 15 to Feb. 1	Apr. 15 to May 1	Jan. 1
Baddeck, Cape Breton	Jan. 22	Apr. 13	None	None	Jan. 6
Georgetown, Prince Edward Island	Dec. 26	Apr. 21	Jan	End of Apr	
Charlotte Town, Prince Edward Island	Dec. 21		None	None	Dec. 20
Summerside, Prince Edward Island	Dec. 11	Apr. 16	do	do	Dec. 11
Casumpeque, Prince Edward Island	Jan. 3, 1887	Apr. 6, 1886	Jan. 4, 1887	May 10	Dec. 20 to 23
Richmond Bay, Prince Edward Island	About Dec. 15	About Apr. 1; bay ice often thick and hard on May 1.	Apr. 1; drives back harbor ice.	Apr. 1 to May 1	End of Dec
Malpeque, Prince Edward Island	Not until closed by field ice	May 1	Jan. 15	May 15	Middle of Dec.; seldo ice to prevent vessel ing until Jan.
Souris, Prince Edward Island	Jan. 4 to 10	Apr. 1 to 10	About Feb. 1	Apr. 1 to May 1	Jan. 2
Pictou, Nova Scotia	Dec. 26	Apr. 18	But little field ice		Dec. 21
Shediac, New Brunswick	Dec. 8	Apr. 30	None	None	Dec. 8
Miramichi Bay, New Brunswick	Dec. 5	Apr. 21	do	do	Nov. 25
Shippegan, New Brunswick	Dec. 8	May 4	None since spring of 1876, then May 14.	June 4, 1876	Nov. 13
Caraquette, New Brunswick	Dec. 11	May 8	None	None	Nov. 25
Dalhousie, New Brunswick	Dec. 5	Apr. 15	do	do	Nov. 18
Gaspé, New Brunswick	Dec. 10	May 10	do	do	Dec. 4 to 8
Cape Magdelen, Quebec	Dec. 15 to Jan. 1	Apr. 10 to 25	do	do	Nov. 25 to Dec. 5
Father Point, Quebec	River rarely freezes; only moving ice.		Dec. 9, mean of 4 years	Apr. 2, mean of 4 years	Nov. 28, mean of 8 yea
St. Pierre	Once in 40 years	Feb. to Mar., floating ice from adjacent coves.	Feb. 15; depends upon wind.	Rarely remains any length of time.	Open at all seasons
St. Pauls Island			Jan. 12	May 21	Dec. 13
Amherst, S. Magdalen Island	Jan. 1	May 10	Jan. 15	May 12	Dec. 17
Anticosti, Southwest Point	Dec. 25	Mar. 21	Jan. 1 to 15	Mar. 31 to Apr. 20	Dec. 5
Cape Norman, Newfoundland	Dec. 25 to Jan. 16	May 29, 1888	Dec. 24, 1887	June 11, 1888	Nov. 16
Canada Bay, Newfoundland				May 10 to June 25	
White Bay (western arm), Newfoundland	Dec. 20	May 10	Dec. 25, to Jan. 10	May 10 to June 15	Nov. 30
Twillingate Harbor, Newfoundland	Jan. 22	May 6	Feb. 10 to 20	Apr. 24	Dec. 7
Little Bay (Betts Cove), Newfoundland	Jan. 1 to 20	May 1 to 10	Jan. 10	May 1 to 10	Jan. 1 to 10
Exploits Burnt Island, Newfoundland	Jan. 1	do	Jan. 15 to 30	May 1 to 20	About Jan. 1
Toulinguet, Newfoundland	Jan. 1 to Feb. 20, averaging about Jan. 20.	Apr. 25 to June 4, averaging about May 10.	Jan. 18	May 25	
Fogo Harbor, Newfoundland	Jan. 9 to 19	Apr. 23	Jan. 14	May 1 to June 1	Jan. 19
Gander Bay, Newfoundland	Jan. 1	Apr. 30			
Greenspond, Newfoundland	Jan. 18	Mar. 9	Mar. 11	May 11	Jan. 7
Bonavista Harbor, Newfoundland	Jan. 20	Mar. 20	Feb. 15	May 20	Dec. 20
Trinity Harbor, Newfoundland	Jan. 31	Mar. 25	Apr. 19	Apr. 29	Jan. 28
Hants Harbor, Newfoundland	Rarely freezes		Apr. 1	Uncertain	Dec. 28
Hearts Content, Newfoundland	Jan. 5 to Feb. 20, averaging about Feb. 1.	Mar. 4 to May 23, averaging Apr. 10.	Apr. 15	May 15	
Harbor Grace, Newfoundland	Jan. 10 to Feb. 20	Mar. 1 to Apr. 1	Jan. 20 to Feb. 20	May 1 to 20	Vessels come and go al round; sometimes de by field ice.
St. Johns Harbor, Newfoundland	Rarely freezes	Mar. 30	Jan. to Feb. 15	Apr. or May	do
Ferryland, Newfoundland			Feb. 10 to Apr. 10, mean of 28 years.	Feb. 25 to Apr. 30, mean of 28 years.	
Cape Race, Newfoundland			Jan. 20 to Mar. 17, mean of 28 years.	Mar. 13 to June 7, mean of 28 years.	
Trepassy Harbor, Newfoundland	Occasionally blocked by field ice.				
Placentia, Newfoundland	About Feb. 1	Apr. 1	Rarely any, only with southerly wind after ice has rounded Cape Race.		
Lamelin Harbor, Newfoundland	Occasionally blocked by field ice 10 days at a time, and frozen over at intervals varying from 6 to 10 years.				
Grand Bank, Newfoundland	Never		About Mar. 1	About Apr. 1	Dec. 24
Harbor Breton, Newfoundland	Outer anchorage seldom frozen for more than 2 or 3 days. Inner anchorage from Jan. 1 to Apr. 15.		Feb. 26	Mar. 25	Dec. 15
La Hune Bay, Newfoundland	About Dec. 1, but easily broken up.	Vessels can nearly always enter by April.	Feb. (rare occurrence)	Apr. 1	Open at all seasons
Burgro, Newfoundland	Never frozen; occasionally blocked by drift ice from adjacent coves.	Moves off with northerly wind, and disappears in April.			Arrive and depart at a sons.
La Poile Harbor, Newfoundland	Feb. 10	Mar. 20	Rarely comes		Navigation nearly al open in bay.
Channel, Newfoundland	Rarely frozen		For a few days in Feb. and and Mar.		Generally open all the round.
Bay of Islands (Humber River), Newfoundland	Dec. 26	Apr. 24	Jan. 1	Apr. 15	Jan. 1
Bonne Bay, Newfoundland	Jan. 15	Apr. 15	Jan. 15	Apr. 15	Jan. 1
Rich Point, Newfoundland	Dec. 15	May 20	Jan. 15	May 15	Nov. 10
Greenly Island	Dec. 15 to Jan. 21	Mar. 1 to 10	Jan. 1 to 10	June 10 to 30	Nov. 5 to 11
Belle Isle			Jan. 3 to Feb. 13	June 14	
Battle Harbor, Labrador	Dec. 13. Navigation closes 4 weeks earlier or later, according to season.	May 11	Jan. to Apr. 15	May 16	

IE OF OPENING AND CLOSING OF PORTS.

e of field ice.	Departure of last vessel before ice season.	Arrival of first vessel after ice season.	Completely or partially closed.	Interval if completely closed.	Thickness of ice.	Remarks, and records of previous years.
.....	Dec. 22, 1885	Apr. 5, 1886	At intervals	Jan. 1 to Apr. 25	About 2 feet	
.....	Feb. 20	Mar. 15	At intervals by field ice	Southwest arm open all winter.	Northeast arm 6 to 12 inches.	
May 1	About Feb. 1	Generally in Mar	At intervals by field ice, never by harbor ice.	.....	Harbor ice about 4 inches	Record 23 years, open generally all the year round.
winds	Jan. 5, 1880	Apr. 24, 1886	Average 3 months each year closed.	Jan. to Apr	6 to 10 inches	
1	Jan. 1	May 1	Completely at times	Jan. 15 to Apr. 15	18 inches	
.....	Jan. 6	Apr. 24	Some years at intervals, other years completely.	Jan. 20 to Apr. 15	do	Mean of 30 years.
.....	.....	.....	Completely	Jan. to Apr	do	
.....	Dec. 20	Apr. 26	do	Dec. 20 to Apr	12 to 18 inches	Mean of 13 years' closing; remainder mean of 33 years.
.....	Dec. 11	Apr. 24	do	Dec. 10 to Apr. 10	12 inches	Mean of 9 years.
.....	Dec. 20 to 23	Apr. 28	do	Jan. 1 to Apr. 10	5 to 12 inches	
1	End of Dec	May 1 to 10	do	Dec. 10 to May 1; shipping place open later in fall.	About 2 feet	Mean of 12 years.
.....	Middle of Dec.; seldom any ice to prevent vessels leaving until Jan.	May 15	At intervals until Feb. 1	Completely from Feb. 1 to May 1.	.....	
1	Jan. 2	Apr. 28	Completely	Jan. 14 to Apr. 5	1 to 2 feet	Mean of 16 years.
.....	Dec. 21	Apr. 20	do	Jan. 9 to Apr. 3	10 to 20 inches	Mean of 5 years; ferry-boat ran in track except from Feb. 5 to 16.
.....	Dec. 8	Apr. 30	do	Dec. 8 to Apr. 30	20 to 25 inches	Mean of 5 years.
.....	Nov. 25	May 7	do	Early in Dec. to Apr. 15	2 to 3 feet	Mean of 58 years.
.....	Nov. 13	May 21	do	Early in Dec. to May 10	30 to 36 inches	
.....	Nov. 25	May 12	do	Dec. 10 to May 8	2 to 3 feet	Mean of 6 years.
.....	Nov. 18	May 5	do	Dec. 15 to May 6	4 feet	
.....	Dec. 4 to 9	May 11	do	Dec. 25 to May 10	3 feet	Mean of 12 years.
.....	Nov. 25 to Dec. 6	Apr. 20 to May 1	Generally in motion all winter.	Jan. 1 to Apr. 25	10 to 20 inches	
f 4 years.....	Nov. 28, mean of 8 years	Apr. 24, mean of 7 years	Completely at intervals	Navigation closed between Dec. 10 and Apr. 10; paths are open about half of the time.	Ordinary field ice	There is rarely any heavy ice until end of Dec. There is always a channel of open water on north or south side of the river, depending upon wind. Wind velocity of 7 miles per hour sufficient to drive ice to mid-channel. Sometimes open water lasts a month at a time.
s any length	Open at all seasons	.....	Occasionally obstructed by field ice.	.....	.....	
.....	Dec. 13	Apr. 18	.....	.....	.....	Mean of 9 years; heavy ice from about Feb. 15 to Apr. 20.
.....	Dec. 17	May 10	Dec. 17 to May 10	.....	.....	
r. 20	Dec. 5	Apr. 15 to May 4	Completely	Jan. 1 to Apr. 1	1 to 6 feet	Mean of 36 years
e 25	Nov. 16	June 6	do	Dec. to May	18 inches	
e 15	Nov. 30	May 1	Completely	Dec. to May	2 to 3 feet	Mean of 23 years. Field ice has remained until July 1 and has disappeared by Apr. 10.
.....	Dec. 7	May 25	do	Jan. 22 to Apr. 30	do	
.....	Jan. 1 to 10	May 1 to 10	do	Jan. 5 to May 10	2 feet	Mean of 10 years; sealing steamers enter all months; other steamers can occasionally enter.
.....	About Jan. 1	May 1 to 10	do	Feb. 1 to Apr. 1	do	Open at intervals between Apr. 1 and May 20.
.....						
1	Jan. 19	Apr. 7	Completely	Jan. 19 to Apr. 27	2 feet	Occasionally open.
.....	Jan. 7	Apr. 28	Completely	Completely from Feb. 8 to Mar. 9, at intervals from Jan. 18 to Feb. 8.	.....	Mean of 11 years.
.....	Dec. 20	May 1 (at intervals all winter).	At intervals from Jan. 20 to May 15.	.....	1 foot	
.....	Jan. 28	Mar. 5	At intervals; after twenty-four hours of southwest wind vessels can enter harbor.	.....	18 inches	
.....	Dec. 28	Apr. 15	At intervals	.....	.....	Dates variable
.....	.....	.....	.....	.....	.....	Mean of 19 years.
.....	Vessels come and go all year round; sometimes delayed by field ice.	.....	At intervals from Jan. 20 to Mar. 20.	.....	6 to 15 inches	Mean of 10 years; never closed for more than 6 weeks at a time.
.....	do	.....	At intervals by field ice	.....	6 to 18 inches	
r. 30, mean of	.....	.....	.....	.....	.....	
ne 7, mean of	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	
.....	Dec. 24	Mar. 3	Completely closed twice in 30 years.	.....	.....	
.....	Dec. 15	Apr. 30	At intervals by field ice	Feb. 26 to Mar. 25	Harbor ice 1 or 2 inches	Mail steamer unable to enter only 3 times in 30 years.
.....	Open at all seasons	.....	Only at intervals	.....	.....	
.....	Arrive and depart at all seasons.	.....	.....	.....	.....	
.....	Navigation nearly always open in bay.	.....	At intervals from Mar. 1 to 20.	.....	6 inches	Navigation closed only 5 or 6 times in 50 years.
.....	Generally open all the year round.	.....	At intervals by field ice	.....	4 inches	
.....	Jan. 1	May 12	Completely	Dec. 25 to Apr. 30	18 inches	
.....	Jan. 1	May 1	do	Jan. to Apr	2 feet	Never frozen until arrival of field ice.
.....	Nov. 10	May 15	do	Dec. 15 to May 20	3 feet	
.....	Nov. 5 to 11	June 10 to 20	At intervals	Completely at times by field ice.	3 to 5 feet	
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	



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